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## Journal of the Society of Arts.

FRIDAY, FEBRUARY 9, 1855.

### SPECIAL MEETING.

FRIDAY, FEBRUARY 2, 1855.

A Special Meeting was held on Friday, the 2nd instant, Viscount Ebrington, M.P., Chairman of Council, in the chair, to consider the question of the Congress proposed to be held in Paris during the period of the Industrial Exhibition, as to the Improvement of International Commercial Law.

After the advertisement convening the meeting had been read, the Chairman called on Mr. Levi to read his Paper—

#### OBSERVATIONS ON THE PROPOSED CONGRESS FOR THE IMPROVEMENT OF INTERNATIONAL COMMERCIAL LAW.

By LEONE LEVI.

The expediency of assimilating the Commercial Law of Nations is no more a theoretical assertion, but an acknowledged practical want. The conference held in London in November, 1852, of deputies from our Chambers of Commerce and legal associations for assimilating the mercantile laws of England, Ireland, and Scotland, established the principle that the differences and the discrepancies existing in the mercantile law of nations, tend greatly to restrict and embarrass commerce by producing uncertainty, perplexity, and delay, inasmuch as every element of uncertainty increases the difficulty of calculating consequences, induces doubt and hesitation, and checks legitimate credit. Illustrations of such a principle were produced, and the evil arising therefrom were clearly pointed out in the proceedings of the Conference and in the reports of the several Chambers of Commerce, although the extent of their influence can hardly be appreciated, because such inconveniences are principally of a negative character, preventing the commencement and growth of mercantile transactions.

The observations I shall submit will, I trust, have the effect not only of giving a new impulse to the steps already taken by her Majesty's Government with respect to the United Kingdom, but also of extending the application of the principle among all trading countries. As the words "International Code of Commercial Law," convey ideas perhaps too vague in themselves, it may be desirable at the outset to circumscribe the meaning in which they are used in connection with the subject. First, then, when we speak of assimilating the Laws relating to commerce, we make no distinction as to the sources; they may be statutes, ordinances, or codes, or they may be usages of trade, or customs of place or of markets, sanctioned by law. Thus, for example, the Merchant Shipping Act, and an established custom relating to bills of exchange, come alike under the generic designation of law.

MERCANTILE LAW has a limited sphere. It is a branch of the private law of a nation, but distinct from that portion which regulates the conduct of the individuals of whom the nation is composed in relation to the State or Government, such as public or political law. Hence, Mercantile Law does not include custom-house law, or financial or economical measures; nor do we interfere with these in promoting the assimilation of Commercial Laws. Again, as to the word Code, it is only the form in which the law is often embodied in a set of rules or definitions. So when we speak of codification, no reference is made by it to the value of the law itself, but

simply to the mode of expressing, publishing, or applying it. The laws of two countries may be assimilated, yet the modes in which they are stated may continue different. The most important point, therefore, is the assimilation of the law—the codification of it is a secondary consideration.

When we speak of International Commercial Law, it must not be understood in the common acceptance of the term as connected with the law of nations, which has reference to the mutual relations of nations collectively. For example, the law by which Russian property (as being that of an enemy) on board a neutral ship shall be respected by the belligerents, is properly international as between nation and nation. As regards commercial law, however, it is essentially a branch of the international law of the state, and, as such, regulating the mercantile transactions of individuals within it only. Nevertheless, so numerous are the transactions which involve questions of right between different states, and between the subjects of different governments; such is the general nature of the rules observed in common by the inhabitants of different countries, and the similarity and homogeneity in the circumstances of commerce, and of the customs which spring alike in all countries, and of the rights and duties arising from buying and selling, which must be the same all the world over,—that mercantile law is held to be a branch of international law, a *jus maritimum universale*.

Having thus fixed the field of our operations, it is easy now to conceive in how many ways a merchant is affected by the provisions of mercantile law. Whether, in fact, he forms a partnership, purchases or sells, ships goods, effects an insurance, becomes a bankrupt, or sues another for money,—as partner, as debtor, and as creditor, as shipowner, as insurer, as shareholder in national enterprises, and even as an author or an artist,—in all these relations he is touched by the mercantile law of the state wherein he resides or transacts business. But it has been said that commerce is essentially universal and of an international character. A firm may have a house of business in many countries; goods are bought in one country and are shipped to another,—and, perhaps, on account of a merchant residing in a third. Bills may be drawn in this country on some person residing in another, and may circulate through many more. In such cases the individuals, the articles, the instrument and the transaction, are all affected by the law of the place wherein the business originates, by the law of the place through which it passes, and by that of the place wherein the affair is consummated.

Now to illustrate how such circumstances practically come into operation, let us suppose a Scotch merchant contracts with a merchant at Naples for certain English goods. At the very outset a difficulty is experienced in England, from the fact that the contract not having been made in writing, advantage is taken to refuse the shipment. After much disputing the goods are shipped, a vessel is chartered, and she sails. The ship gets damaged; she puts in at Malta, and there arrangements are made for a bottomry-bond. The ship proceeds to her destination to Naples. The purchaser becomes a bankrupt, and the goods are sequestrated by the Neapolitan tribunal. The shipper, ignorant of the mode of procedure in the Neapolitan Courts, loses the whole amount. Here is a transaction which, independent of the mode of payment by bills, becomes subject to the laws of England and Scotland, the law of Malta, a British colony, and the law of the Two Sicilies.

The anomalous state of the mercantile laws of the British empire gives just ground for surprise, for, from the queries issued by the Mercantile Law Commission, it appears that the points of difference between the Mercantile Law of England and Scotland, consisted of 14 points on the law of contract of goods and chattles; 19 points on bills and notes, 9 in the limitation of actions, 1 in shipping, 3 in the law of lien, 2 in the

law of parliament, 5 in mercantile guarantees, 5 in the law of principal debtor and surety, 13 in the law of debtor and creditor, 13 in the law of partnership, and most of the law on joint stock companies.

The Colonies and dependencies still preserve antiquated foreign laws as the bases of their jurisprudence—St. Louis is yet governed by the Coutume de Paris, which half a century ago was abrogated in France by the Code Napoleon. In the Canadas a portion has the French Code, a portion the English, and a portion the Scotch law; Trinidad has the Spanish law, and the Cape of Good Hope and Ceylon, the Roman Dutch law, long ago abolished in Holland by the new Code of Commerce. A communication was some time since made to the Society\* as to the state of the Patent Law in the Colonies, which exhibits a complete discordance almost in every one of them, and considerable inconvenience is now felt regarding them as to the Law on Copyright.

The question is even more difficult as regards foreign countries, inasmuch as to the differences in the laws, there are superadded the differences of language. The legal differences are, moreover, in many cases of a very essential nature. Transactions which are perfectly legitimate in one country are illegal in another. Here a merchant would have certain rights arising from a specific trading; there they would not be acknowledged. The tribunals differ materially in their character and procedure. Proceedings commenced in one country are of no use in another. A person commits a fraudulent bankruptcy in this country—he crosses the Atlantic and is safe. A bankruptcy is committed abroad; some of the creditors are in England; before these have any notice or any information conveyed to them, the tribunals settle the affairs, and the British creditor is ousted. A bill of exchange may be endorsed in France with the simple signature in blank. An Englishman accustomed to such mode of indorsement, takes it without observation. He finds out afterwards that such indorsement was not valid. These are practical difficulties which are often experienced, although they do not form the subjects of dispute in the British tribunals.

Some illustrations of the defects existing in our commercial treaties respecting the extradition of fraudulent bankrupts were given in the report of the London Committee of Merchants, and I deem it important, for the proper appreciation of the subject, to refer to them, the cases specified having been communicated to that committee by a well-known and highly respectable criminal officer. I will here quote two cases from the report alluded to:—

*Case of a fraudulent Teller in a Scotch Bank, who was set at liberty by the American courts, in consequence of a defect in the treaty between Great Britain and America.*

The first case to which I would draw the attention of the committee, was the case of a teller in one of the Scotch banks, who absconded to one of the United States, carrying with him several thousand pounds belonging to his employers. On the employment of the bank, which this man so defrauded, I followed him to America, and I succeeded in apprehending him in one of the far west townships. At the moment I took him into custody, he delivered up to me the whole amount which he had stolen from the bank. Having thus secured the money, I took the fugitive before the mayor of the town, and applied for the interposition of his authority, by indorsement upon the Scotch warrant, to enable me to conduct the prisoner in custody through the American States homewards, for the purpose of taking his trial in Scotland. The magistrate who examined the warrant, and the evidence upon which it proceeded, expressed himself satisfied that the proceedings were regular, and that there was sufficient evidence to show that the person named in the warrant had stolen the bank's money, and that the man in custody was the thief. But, on referring to the treaty between this country and America, the mayor found that it only stipulated as follows: 'That each of the high contracting parties shall deliver up to the constituted authorities all persons fleeing

from the respective countries, charged with the crime of murder, or assault with intent to murder, or piracy, or arson, or robbery, or forgery, or the utterance of forged paper, and upon that magistrate's construction of this article of the treaty, he decided that it did not contemplate the case of *stealing* money, and that, therefore, he had no power to deliver up the prisoner to the British authorities; and to my great disappointment, he set at liberty this most fraudulent bank teller. My mission to America would thus have been entirely unsuccessful, had not the delinquent, at the moment I arrested him, while under the influence of nervous fear, disgorged the whole of the embezzled funds in his possession.

*Case of a fraudulent Teller in a Canadian Bank, who was set at liberty in London owing to a defect in the Act of Parliament which regulates such cases.*

The other case was placed in my hands in America, at the time I was engaged with the case of the Scotch bank teller. It was the case of another fraudulent bank teller, who had held that office in one of the principal banking establishments in Canada. For several years, while enjoying the entire confidence of his employers, he had carried on a systematic deception by falsifying the bank's books of account; and on the appointment of a new chairman of the Board of Directors, who showed an inclination to examine the bank's affairs more strictly than his predecessors, this teller took alarm, and suddenly decamped to the United States, not only carrying with him large sums of money, but leaving the bank's affairs in so entangled a position as to create further loss, the amount of which it was impossible to estimate.

On the employment of the Board of Directors of the Canadian Bank, and armed with a Canadian warrant, and a power of attorney, I travelled several thousand miles through the American States, tracing their teller here and there, until at length, finding himself closely pursued, he betook himself to sea, where, for a time, he was safe from my pursuit. Upon some slight information, and weighing probabilities, my judgment was convinced that he had sailed from Philadelphia for Great Britain. I reported my opinion to the bank, and under their instructions, I embarked for this country; and on my arrival, I found that the object of my pursuit had sailed from Philadelphia for Greenock. I immediately proceeded to Glasgow, where I discovered traces of him, and found that he had departed for London by way of Fleetwood. I followed him to the metropolis, and within a week afterwards, finding himself thus closely pursued, he gave himself up to the police authorities, confessing what he had done, and placed himself in the hands of justice. Possibly he may have done so under legal advice; for the police magistrate declined to detain him, on the ground that he had no jurisdiction, and the prisoner was discharged.

Under these circumstances, the Canadian warrant was instantly verified; and an application was made to the Secretary of State to indorse the warrant, under the Act 6 and 7 Vict., cap. 34, which was passed for the express purpose of meeting such cases. But, like the American treaty, that statute was found defective; the Home Secretary was advised by the crown lawyers that he could not safely detain the prisoner, and he accordingly declined to do so. The teller being in possession of a large sum of money belonging to the Canadian bank, an attempt was made to hold him to bail as a debtor, about to leave England; but this also failed, for want of legal evidence of an intention to quit the country.

Thus, in the very focus of London, within the jurisdiction of our own courts, and upon the admission of the man, in the very presence of the Secretary of State for the Home Department, that he had defrauded the Canadian bank, the directors were denied even the benefit of detaining the defendant to assist them in unravelling their affairs, which he had left in a position so confused and embarrassing.

Had the least violence been used; had either of these two delinquents effected a forcible taking of even a few shillings, which, technically, would have amounted to robbery, they would both have been detained, tried, and transported. But because they did what was far more base and cowardly, namely, steal their employer's money, not only were they set at liberty, but, in the case of the Canadian teller, an *admitted* claim for a large amount of abstracted property was, by reason of the defective state of the law, rendered void; and two flagrant and confessed criminals were enabled to confess their guilt, and, at the same time, to bid defiance to their own confiding employers whom they had robbed.

It is important also to notice that much inconvenience is at present experienced from the fact that in the Canadas

\* Vide "Journal of the Society of Arts," Vol. II., page 213.

no bankrupt law exists, and a British creditor has scarcely any means of seizing in that country property in bills of exchange, or other instruments, in the hands of a bankrupt debtor.

It will, therefore, be acknowledged, that it is not a mere theory for the interests of commerce to remove these differences in the mercantile law and practice of nations. Let us remember that trade is elastic and expansive, provided, however, it be left in complete freedom, and that it be founded on firm security. To promote the freedom of trade is the duty of the political economist; to promote its security is the duty of the jurist. To shield the inviolability of credit is one of the best means of promoting the extension of commercial intercourse between individuals, as well as between nations; and, just in proportion as the legislative regulations of different countries tend to introduce confidence and security so the mercantile transactions between them will increase.

With what confidence can a British merchant carry on trade with a foreign country in which, should any quarrel arise, he knows not how, or even whether, he can obtain any redress? Much is truly done in a blind confidence that things will go right, and few anticipate reverses; but commerce will acquire a fresh energy when that which now silently operates as a negative restriction shall give place to open and positive freedom. Railways and telegraphs, improvements in shipping, and the extension of steam navigation—the advancement in the arts and manufactures—the increase of precious metal—the success of mining adventures—and, also, the “Universal Exhibitions”—have lately concurred in bringing nations together, in rendering the capital of all countries available in the spirit of speculation for the furthering of colossal enterprises. It is now demanded, and it becomes important that nations should afford the best support which it is in their power to concede for the security and freedom of this immense international commerce.

The question at present is, how can this be best attained? We answer, first, by removing all unnecessary discrepancies between the mercantile law of different countries; secondly, by promoting, as much as possible, a general knowledge of the laws in force in the respective countries; and, thirdly, by constituting commercial tribunals of an essentially international character. I cannot but think that a code is the best mode of extending the knowledge of mercantile law, and when these needless differences are by degrees removed, may we not look forward to the total realisation of the idea concentrated in an International Code of Commercial Law? We re-echo the sublime words of the late learned Mr. Justice Story when he said—“What a magnificent spectacle will it be to witness the establishment of such a beautiful system of juridical ethics; to realise not the oppressive schemes of ‘holy alliances’ in a general conspiracy against the rights of mankind, but the universal empire of juridical reason, mingling with the concerns of commerce throughout the world, and imparting its beneficent light to the dark regions of the poles and the soft and luxurious climates of the tropics. Then, indeed, would be realised the splendid visions of Cicero, dreaming over the majestic fragments of his perfect republic; and Hooker’s sublime personification of the law would stand forth almost as embodied truth, for ‘all things in heaven and earth would do her homage, the very least as feeling her care, and the greatest as not exempted from her power.’”

The Society may be aware that, previous to the Great Exhibition in London, in 1851, I had the honour to present an address to his Royal Highness Prince Albert, our illustrious President, suggesting to him to turn to account the vast assemblage which that exhibition would attract by assembling a Congress for the promotion of such an International Code of Commercial Law. His Royal Highness honoured me with a communication on the subject, in which he expressed an opinion that uniformity in the laws by which commerce is regulated in different countries would be, if it could be obtained, of immense advantage to commerce

generally; that it was a question for the different governments to effect such changes in their commercial laws as they may think desirable; and that it was of great utility to have the legislative enactments of different countries upon the same subject in juxtaposition, so as to afford ready means for comparing their relative merits, which would infallibly lead to a certain degree of assimilation. The subject then was, however, not sufficiently mature for the proposed Congress.

A society having been formed in Edinburgh for the promotion of the object, presided over by the learned Professor More, it was determined, with the concurrence of the most important Chambers of Commerce of the Kingdom, especially the Liverpool, Leeds, Bradford, and Hull Chambers, in the first instance to endeavour to obtain an assimilation of the mercantile law of the United Kingdom, inasmuch as thereafter it would come with better grace to ask the adhesion to it of foreign countries. Hence the great Conference in 1852, the practical result of which was the issuing of a Royal Commission to inquire into and ascertain how far the Mercantile Law in the different parts of the United Kingdom of Great Britain and Ireland might be advantageously assimilated. | Meanwhile other agencies were called into action, and by the efficient efforts of the London Committee of Merchants, several Bills were introduced into Parliament, some of which have since passed into law, whilst there is one Bill, re-introduced this session by the learned Lord Brougham, for Extending the Law of Dilligence, or summary execution on Bills of Exchange, as it exists in Scotland and in continental countries, into England and Ireland.

In September, 1853, on the occasion of the Statistical Congress held at Brussels, the Edinburgh Society entrusted me with an address, which was also strengthened by communications from the Liverpool and Hull Chambers of Commerce, to M. Quetelet, the president, suggesting the expediency of submitting the subject of Commercial Law for the consideration of that Congress. That Congress was attended by official and other representatives from twenty-three States, and a resolution was passed expressing a wish and trust that the differences now existing in the mercantile legislation of nations might be diminished, if not removed altogether. The address and the resolution passed by the Congress formed the subjects of discussion in the reports of the deputies to the respective governments, whilst a memoir which I prepared was appended to the official report of the Congress, so that the question has been opened and submitted to the consideration of Europe and America.

Another opportunity now presents itself for the further promotion of this noble object in the forthcoming “Exposition Universelle” in Paris next summer, and I had recently the honour of presenting to the French Government an address for his Majesty, the Emperor, from the Edinburgh Society, submitting the desirableness of issuing an Imperial Commission, or of adopting any other step which might be deemed more expedient for ascertaining the most important points of difference between the laws of France and of the United Kingdom, and of the other kingdoms and states of Europe and America, which inquiry would doubtless prove of great value for determining the merits of the respective systems of jurisprudence. And with a view to obtain a comprehensive examination of the state of mercantile law in different countries, and also of merging into one focus the wisdom and practical knowledge of the most eminent jurists of Europe and America, the Society further submitted the expediency of assembling a Congress of jurists and deputies from the Chambers and Tribunals of Commerce of the principal commercial towns in the civilized world during the time of the Great Exhibition in Paris, in 1855, to lay the basis of an International Code of Commercial Law.

The steps suggested by the Edinburgh Society to the French Government are thus twofold—the issuing of an Imperial Commission and the assembling of a Congress.

The first is essential for ascertaining the principal points of difference in the legislation of different countries; the latter for combining the experience of commerce and the learning of the jurist, with a view to establish the basis of a good, sound, and equitable system of commercial laws. The commission suggested, should, like the British commission, if possible, be of an international character, in order that the peculiarities of, and the practical good or evil resulting from each system, may be properly demonstrated. The British Commission for the assimilation of the mercantile law of England, Ireland, and Scotland, is composed of an English, an Irish, and a Scotch Judge, two Queen's Counsel, one of whom is cognisant with Scotch law, and three merchants, two from London, representing two distinct classes of commerce, and one from Manchester, representing the manufacturing interests. The constitution and working of the International Imperial Commission, suggested to his Majesty the Emperor of the French, may be a matter of much difficulty, especially on account of the variety and distance of the countries which may join in the attempt. Another mode may be suggested, that of forming a Central Commission in Paris, exclusively of French jurists and merchants, which shall correspond with similar Royal Commissions, to be issued by the several States, each acting separately, yet upon one common basis.

In answer to the address of the Edinburgh Society, his Excellency, M. Fould, Minister of State, honoured me with a communication to the following effect:—

Paris, 8th November, 1854.

SIR,—I have placed before the Emperor the address of the Edinburgh Society and your work on Commercial Law. His Majesty has taken personal cognisance of these two interesting documents, and has appreciated, as it deserved to be, the proposal to choose the time of the Universal Exhibition in 1855, to assemble at Paris a European Congress, which shall lay down and determine the basis of an International Code of Commercial Law. Nevertheless his Majesty has not yet taken any decision on the subject, and by his orders I have committed the examination of the address of the Edinburgh Society and of your work, to the Legislative Section of the Council of State. When I shall render an account to the Emperor of the result of this examination, I shall have the honour again to submit to his Majesty the proposal of the Edinburgh Society.

Receive, sir, the assurance of my esteem,  
The Minister of State,

ACHILLE FOULD.

This despatch reached me too late to admit of its being communicated to our noble Chairman previous to the delivery of his excellent address to the Society at the inaugural meeting of this session. This I regretted, not only on account of a most favourable opportunity having been thus lost of adding this subject to the many schemes of usefulness already included in the programme of the Society's proceedings of the year, but also because our noble Chairman had already taken a personal interest in it, when he attended the Statistical Congress in Brussels, in 1853. In consequence of the correspondence which passed subsequently between Viscount Ebrington and myself,\* and after mature consideration of the documents submitted to them, the Council of the Society, at their meeting on the 20th December, passed a resolution, "That the Council considers the holding of the Universal Exhibition at Paris, in 1855, affords a favourable opportunity for discussing the improvement of International Commercial Law, and will forthwith seek the opinion and co-operation of the Chambers of Commerce of the United Kingdom on the subject." It is gratifying to find that the opinion of most of these Chambers has already been expressed as greatly in favour of the proposed Congress.

I have, moreover, learnt that instructions have been transmitted to the French Consuls abroad, by the French Government, to ascertain the feeling of the mercantile classes on the subject, and the Chambers of Commerce of this country have, in consequence, framed resolutions of the tenor of those addressed to this Society. There are reasons, therefore, to trust, that the Emperor of the French may be disposed to assemble the proposed Congress. Indeed, when we consider the immense development of commerce in France since 1807, when the Code Napoleon was enacted, it is evident that it is susceptible of considerable improvement. The bankrupt law was entirely reformed in 1838, and many other portions have been considerably altered. Moreover, the Code itself was, in my humble opinion, defective in the distribution of some important branches of commercial law between the Civil and Commercial Codes and the Codes of Civil and Criminal Procedure. For instance, the contract of sale, which is essentially commercial, is scarcely hinted at in the Code de Commerce. The laws of partnership and agency are inconveniently divided between the Civil and Commercial Codes, whilst the law of arbitration is only to be found in the Code of Civil Procedure.

Besides the additions and annotations made by the judgments of the Courts, have already rendered the French Code a very imperfect exponent of the French law. It is fortunate for jurisprudence and commerce that in the great and noble undertaking of framing an International Code of Commercial Law we can appeal to one whose name is associated with the greatest reform ever accomplished in jurisprudence; and I hope that his Imperial Majesty Napoleon III. may be instrumental in effecting what will, doubtless, have a most beneficial influence on the interests of commerce, morals, and justice, throughout the world.

That there are difficulties to be surmounted for the accomplishment of such a design is beyond doubt. We know how wedded each country is to its own system of legislation, and how jealous nations are of introducing new principles. Nevertheless, a more liberal spirit universally prevails; extreme prejudices are abandoned, especially where it is ascertained that a change is likely to be productive of much good. For such a purpose, it is all-important to have in view the only basis upon which any assimilation can proceed, as established in the proposition of the conference in 1852, "That dismissing all local, and even national prejudices, the assimilation and improvement of the mercantile law of countries should be effected by selecting those principles and rules, wherever they may be found, which shall be deemed the best and most beneficial to the commercial classes and to the community at large."

From a Congress such as has been proposed, much mutual advantage may accrue. Great Britain possesses a boundless store of legal learning; France excels in the beauty and perspicuity of exposition of the law; the Spanish and Portuguese Codes are distinguished for their fullness and precision; Germany is rich in learned and philosophical jurisconsults; Italy has in her legislation many institutions in advance of other countries; whilst the United States of America have the greatest experience in international law, owing to their peculiar federative constitution, and the complicated relations consequently arising between their several semi-independent governments. Many kindred questions of a similar international character may also be advantageously considered on such an occasion, as, for instance, international Postage—international Copyright—and international Patents. The Decimalisation of our Coins, Weights, and Measures may also be appropriately discussed here; and the great question of International Maritime Law might be mooted, as regards the rights of commerce in time of war, though the latter can with difficulty be altogether separated from politics. These questions, however, are only incidental to the great object for which the proposed Congress

\* Vide "Journal of the Society of Arts," Vol. III., p. 76.

may be summoned, which is specially the promotion of an INTERNATIONAL CODE OF COMMERCIAL LAW.

### DISCUSSION.

Previous to the discussion, the Secretary stated that the Council had received letters from the Chambers of Commerce in Belfast, Bradford, Bristol, Hanley, Leeds, Liverpool, Newcastle, and Worcester, approving of the suggestion that a Congress should be held in Paris during the occurrence of the Universal Exhibition this year; and from the Blackburn Chamber of Commerce and the Manchester Commercial Association, expressing no opinion for or against the proposal. The following letter, addressed to Mr. Leone Levi, from Professor More, Chairman of the Edinburgh Society for Promoting an International Code of Commercial Law, was read by the Secretary:—

"Edinburgh, January 27, 1855.  
"MY DEAR SIR,—I have just received your note of the 26th current, in reference to a meeting of the Society of Arts on Friday next, to consider the steps to be taken for promoting a general international code of commerce. I entirely approve, as I have formerly told you, of the proposed congress for this purpose, to be held at Paris during the time of the Great Exhibition of 1855, and it appears to me that France is the country where such a measure should originate. It has already a remarkably good code of commerce, which might be the foundation on which a general code for all the world might be reared. And if, as the "*Conférences*" in reference to this code hear, that Napoleon took much personal interest in its formation, and made several very useful suggestions, I cannot help thinking that his nephew, the present Emperor, might lay the foundation of a much higher fame, by countenancing such an undertaking as I refer to, than by the most brilliant victories he might achieve in the field. At all events, it is certain that the name of his uncle will descend to posterity (like that of Justinian) rather as the author of the French codes of law, than as the General who, by his matchless talents, overthrew such hosts of foes.

"But, when I speak of France as the country best entitled to take the lead in such an enterprise as that of originating a universal code of commercial law, I have in view chiefly the very high rank of her commercial jurists. When I call to my mind the unrivalled works of Pothier, of Valin, of Emerigon, besides the more recent invaluable works of Tonillier, Duvergier, Pardessus, Troplong, Félix, and many other modern jurists, to say nothing of the older jurists, Domat, D'Aguesseau, Cochin, and many others, it is impossible to dispute that the jurists of Europe owe more to France than to any other country in the world, for illustrating and expanding the rules and principles of commercial law.

"I trust, therefore, that something effectual will be done at the meeting of 1855, to promote a general code of international commercial law. To France, indeed, in the valuable "*Concordance*" of M. St. Joseph, we are indebted for the first attempt to give a general view of the discrepancies which at present exist in the commercial laws of different nations of Europe, and to which you have still more strongly directed attention by your valuable work, which, besides what may be found in St. Joseph's work, gives a view of the American, English, and Scottish law, and of many other nations.

"I am, very faithfully yours,

"J. S. MORE."

"To Leone Levi, Esq."

The noble CHAIRMAN having invited discussion upon the admirable paper with which Mr. Leone Levi had favoured them, in which he said there were ample subjects for discussion and observation,

Mr. HOWELL said he knew of no man more capable of elucidating this subject and laying it clearly before the English mind, than Mr. Leone Levi. Our present close alliance with France appeared to offer a happy opportunity of doing good in this matter, for undeniably France had taken the lead in framing sound laws for commercial purposes. The catalogue of learned men given that evening, in the letter of Professor More, showed that in that country great jurists, eminent thinking men, had considered the subject worthy of their study; and under the patronage of the first Napoleon and other great sovereigns, vast progress had been made in enacting rules of

justice applicable to commerce. In England the subject had been comparatively neglected. Probably our colonial system had been adverse to a consistency in or uniformity of national law. In acquiring these possessions, past governments studied rather the means of enforcing and preserving our rule, than of proclaiming and spreading true principles of justice. In the two Canadas, the laws were dissimilar, and in a state highly prejudicial to the advancement of trade. At the Cape of Good Hope he found Dutch law (now obsolete in Holland) still in force. In Jamaica and Barbadoes, English law; in Trinidad, Spanish; in St. Lucia and the Mauritius, French laws prevailed. In Guernsey and Jersey very peculiar laws existed; and he thought the time had arrived when the mother country should review the charters under which such colonies were governed, and reconsider the policy of preserving those alleged principles, which, in his opinion, were as detrimental to the real improvement of a colony as they were to the commercial interests of mankind at large. The great business of the legislator was to discover true principles; and the nearer different countries approached them, the greater was the probability of assimilation being accomplished. He thought, if France and England could bring their laws nearer in character to each other, great good would result from it, but still it could only be done slowly. It was a work of time to break down prejudices in favour of laws to which communities were wedded by education and habit; and he was inclined to think that the success of their efforts would never be strikingly brilliant. He thought it a reproach upon the bar of this country that so little attention had been given by it to the framing of commercial law. He had himself given some attention to the subject, in conjunction with his friend on the right (Mr. Hawes), who was chairman of an active committee of merchants for the amendment of the bankruptcy laws; and it was deplorable to think that from amongst the multitude of able barristers living in this country, none had come forward to assist that committee with their skill and knowledge, in accomplishing a reform of the bankruptcy laws; and until very lately (since the subject had become popular) they had equally neglected that other great question, the partnership law. Mercantile men, who could ill spare the time, and had not the knowledge to do justice to bankruptcy laws, alone accomplished its amelioration. Not so in France—there eminent lawyers had found some attraction in the subject, and had thereby well served their country. He was one of those who thought that the progress of mankind in civilization depended upon the prevalence of free and fair dealing, of truth and the administration of justice. Many of our statute laws were enacted under a system totally different to that which was now recognised as the right system—free trade. In Britain and all her dependencies the opposite system prevailed, and the laws were adapted to it. Even now candidates for the representation of boroughs in Parliament succumbed to the old habit of the people, by promising to uphold their "rights and privileges." He hoped the time was come when the people would see that the general interest was the only true interest. The recent discoveries of science were so grand, and the means of spreading information were now so great and rapid, that it was rational to anticipate a large increase of civilization, education, and trade, and of the dissemination of those better principles which added to the dignity of man, which employed, nourished, and ennobled him; and, believing as he did, that these great objects would be accelerated by the discovery and enforcement of moral truth, he felt great pleasure in recommending the subject so ably put before them by Mr. Leone Levi, to the serious consideration of every public man.

Mr. HEADLAM, M.P., said, although he had not heard the early portion of the paper, yet having been somewhat familiar with the subject, he was in a condition to state his gratification at the manner in which it had been brought forward, and his strong sense of the value of the observations which had been addressed to them; and his

opinion that a wide field had been opened; from which they might reap ample fruit. He could say, that amongst all the questions that came before the courts of law, he did not know any more practically difficult, both as to the application of the law and as to the law itself, than cases of international commercial law. For instance, there was the greatest difficulty in deciding, when contracts were made in foreign countries, how they should be construed, and as to the disposition of the property of a person who had died in one country being the subject of another country. The difficulty was scarcely to be explained without going more largely into technicalities than would be agreeable to the meeting; but it was worthy of the serious consideration of any one interested in pursuing the strictness of the law. He was bound to admit that there was much truth in the observation of the gentleman who had just sat down, that there was great lack of attention on the part of the lawyers of this country, to the improvement of the commercial law. Mr. Hawes smiled at the remark, but it could not be applied to him, for he had given great attention to the subject; but nevertheless, it was true that a very small degree of attention had been paid by those interested in the law to the improvement of the commercial law of the country. A far greater degree of attention had been bestowed upon the law relating to real property, although it had not led to any very great result. With respect to the bankruptcy law, there had been a number of acts passed, although he did not believe the general result had been very successful. However, to come to the question before them, he recollected that a few years ago the same subject as that now before the Society, was mooted before the Society for Promoting the Amendment of the Law, and he formed one of the deputation appointed to communicate with Lord Derby upon the subject of the appointment of a commission of inquiry into the working of the commercial laws, and he had hoped that such a commission would have been issued, and made a report, by means of which accurate information could be obtained as to the practical difference in the commercial laws of different countries; but nothing was done in it. He believed that now more attention was being paid to the subject. He had received a letter from the Chamber of Commerce of Newcastle, showing that they were alive to it, and were prepared to give their support to any measures for improving the present state of the law. Having tried the government on a former occasion, and not obtained any result, (and perhaps it was a thing which could not be done by one country alone, and no measure could be brought before Parliament), he believed the best course was the one now suggested—viz., a congress of the representatives of different countries in Paris, when they might discover what were the real differences of the law, and endeavour to get a united action. From that much might be accomplished. There were, undoubtedly, many laws which had no inherent principle in themselves, on which it were better to have the same rule prevailing in all commercial countries, and it might be that they would have to yield some of their prejudices to obtain uniformity. Coins and weights and measures, and matters of that kind might be regulated on some principle of uniformity. It would be impossible to exaggerate the convenience to the commercial world if such a unity of action could be obtained amongst the nations of the earth.

Mr. COLLIER, M.P., felt, as a member of the bar, the truth of the reproach which had been thrown (although he was sure not offensively) upon that body, relative to the inattention of the bar to questions of this description, and, he might add, generally to questions of jurisprudence. He would say, as a member of the bar, he thought the profession was in some degree chargeable with attending more to legal technicalities than the principles of jurisprudence, and to the peculiarities of their own law rather than the law of other countries. He thought this arose in a great measure from the extreme intricacies—he might say, the absolute chaos—of the law

of this country. They had in this country two systems of administration of justice,—one the common law, which originally was supposed to be all that was required, and to do all that was just, but which, from various circumstances, had turned out to be so unjust and so unequal to the requirements of the country, that another system had been required to modify and improve it, which was called equity. Thus they had a double system, which was unknown in any other country; but not satisfied with that, they had a third, that of the ecclesiastical courts; so that they had in fact three systems of administering justice, proceeding not only by different forms, but also by different principles; and there were also inferior tribunals, with their own modes of procedure, which he would not enter into. The consequence of this subdivision of jurisdictions was, that the attention of the lawyer was sufficiently occupied by attending to one branch only of his profession—one applied himself to Chancery, another to the common law, and another to the ecclesiastical courts—so that scarcely any one man thoroughly comprehended the whole of the law of England; and if he had not time and opportunity for that, it could hardly be expected he should give his attention to the laws of foreign countries. It was a fact to be admitted, that English lawyers generally were more technical, and though not less acute, perhaps more narrow-minded than the lawyers of most other countries. That was a defect which he thought ought to be remedied, and which he also thought was in course of being remedied, but it would necessarily be a slow course. But it seemed to him that they went to some extent to remedy it by calling to the councils of lawyers gentlemen who were not lawyers, but who brought to the consideration of law reform a practical acquaintance with the wants of the community, and other circumstances, and who were not hampered by too great a knowledge of technicalities; and the Society for the Amendment of the Law, being composed of laymen and lawyers, was calculated to promote the object they all had in view. He thought so long as law reform was left entirely to the judges and the older members of the profession, who having obtained for themselves honours and wealth from a long course of practice of the law as it was, were seldom much inclined to alter it; if law reform were left to that body, honourable and learned as it undoubtedly was, there was a danger that while all the rest of the world was moving on, Law Reform might remain stranded. (A laugh.) Under these circumstances he was glad to meet a society like this, who seemed inclined to take a step in advance. The object was to bring together the jurists of this country and the jurists of foreign countries, and he thought it was likely they might derive a good deal of light from their continental neighbours and an acquaintance with the law of other countries adapted to the convenience of mercantile and other transactions. He would mention one subject which it was very desirable should be considered—that was the law of partnership. In this country they were peculiar in that, and it was well that that should be amongst the subjects for consideration, in order that they might be instructed by the manner in which that law was administered in other countries. It seemed to him very desirable that the object contemplated by this society should be carried out, and that some of their body (including, he trusted, Mr. Leone Levi and other gentlemen versed in the commercial laws of other countries as well as this) should meet the foreign jurists and take measures for the assimilation of the mercantile laws of England with those of France and other continental countries. A commission had been appointed by Lord Aberdeen, but no report had yet been made; but they knew that all commissions were tardy. He concurred in the general thanks which they all felt were due to Mr. Leone Levi for his very able paper, and he (Mr. Collier) would be glad to co-operate in any measures which he deemed expedient to assimilate the laws of this and other countries.



Dr. WADDILOVE said, doubtless this was a question of much interest and importance, particularly at the present moment, inasmuch as an approximation towards legal uniformity would tend to cement that harmony which happily existed between France and England, and also to simplify and thus facilitate commercial relations with other countries. There was no one more competent to speak on this subject than Mr. Leone Levi. He had paid great attention to it; he had received a flattering tribute from the Society for his valuable work, in which he had collected the commercial laws of the world; he, therefore, could point out where they differed, and wherein it was desirable they should conform. At the same time he feared Mr. Levi had become so enamoured of his subject, and so much engrossed with its importance, that he had been tempted to press its claims a little beyond the limits of possibility, if not of necessity. The paper which had been read presented two prominent features—one, the structure of an universal commercial code, the other, the establishment of tribunals of commerce. Now a code was supposed to embody within it the whole legal system to which it related, whether of civil, municipal, or commercial law, and thus was of a most comprehensive character. It appeared, then, to him, impossible to reduce the commercial laws of all nations into one uniform system. Laws were interwoven with the national customs, the domestic habits, and the social relations of a people. If you attempted an universal code you would fail. No doubt there were some minor discrepancies in our own and the commercial laws of other nations, which you might remove. For instance, a bill of exchange was not negotiable in France unless it had endorsed on it other particulars besides the name of the indorsee, whereas in this country the name was sufficient; here a similarity of requisites might be secured by an easy process—a simple arrangement, by treaty or convention. But take another case. In this country it was known no married woman could enter into a contract. In France she could do so. Supposing a married woman in England gave an order for silk to a mercer in Paris. The French trader not doubting but that the law in England made the person who ordered the goods liable for their payment, sent the silk over to England. What was the consequence? How was the mercer in Paris to be paid? The married woman was not liable, and the mercer could only bring an action against the husband, and even he would not be responsible unless it could be proved that the articles were necessary, and consistent with the wife's condition in life. To assimilate the law here, you must either remove the disability of the married woman in England or impose it in France; either of which steps would be so subversive of a national and domestic institution, that you could scarcely effect the change in either direction. With regard to tribunals of commerce, he had no great faith in their operation as tribunals of justice, but if they were so desirable, you had them practically in a reference to arbitration. It was competent to merchants and others to submit their disputes to members of their own body for decision; this was frequently done, where the bankruptcy laws were supposed to operate prejudicially, by appointing a committee to arrange a bankrupt's affairs. Again, if you had tribunals of commerce, you must often produce evidence before them. We had established a system of evidence, technical and artificial, he admitted, but one which we looked upon as the safeguard of our liberties and the protection of our property and lives. A very different system prevailed in France. We were careful to prevent a person from criminating himself, or prejudicing his own case; the tribunals of France acted on a contrary principle. Thus, to assimilate modes of procedure between the two countries, would involve a violent change in established rules, and we must either abrogate our system and adopt that of France, or France must abrogate her system and adopt that of England. He made these remarks not to discourage the effort to assimilate the law regulating the commercial transactions of different nations, but to point out the difficulties that lie

in the path of those who aimed at framing one universal code, and to caution them against attempting too much, for if they did, he feared they would fail, and, by grasping at the shadow, lose the substance.

Mr. LYNE said he held in his hand letters from men of high standing on the subject of commercial law, and he had come to lend his humble assistance to Mr. Leone Levi on this occasion, an assistance which he might say upwards of one thousand of the principal merchants of the country would be glad to afford. He had the honour to hold the position of Chairman of the Tribunal of Commerce Association, which was supported by upwards of 1000 subscribers, and he had letters from mercantile men in the principal towns of the kingdom, bearing upon this subject, and also one from Mr. Hume. He thought that in pushing forward a principle of this kind it ought, in the first instance, to be shown that in this country there was a wide spread feeling in favour of Tribunals of Commerce. He had been agitating that question for the last four years, and large sums of money had been spent in obtaining the opinions of the mercantile world, and he was now in a position to say that the commercial world was in favour of the principle of Tribunals of Commerce, such as were established in France. Remarkable enough, (the two members of parliament being present), two of the strongest letters he had received were one from the Chamber of Commerce of Newcastle, and the other from Plymouth, and Mr. Collier would know the warmth of feeling in the latter chamber. The Tribunal of Commercial Association now proposed to petition Parliament for an inquiry into this question, and in such towns as had no Chamber of Commerce, he had written to the Mayors to ask how far they went with them, and to request them to add their names to the petition for parliamentary inquiry into this great question. The answer received had been most favourable. They felt that in going to France to solicit co-operation in this movement, the question would be asked them, what court they had that would offer a guarantee that they were in earnest when they said that commercial disputes ought to be submitted to natural and not to artificial or technical law. He knew there were many difficulties in the way of this, but he agreed with Mr. Hume that when they made the inquiry it would be found that the assimilation of commercial law and free trade must go hand in hand. As he before stated, he had come there to show that the association with which he was connected, were anxious to support Mr. Levi in his great movement, but he thought they should have something like commercial tribunals established in this country before they entered upon the project of the assimilation of the commercial laws of this with other countries.

Mr. H. T. HOPE apologised for rising to propose a resolution following out the sentiments which had been delivered this evening, inasmuch as he was not able to bring any practical information or legal knowledge in illustration of the subject which had been so well discussed. He was, however, glad to find, both from the paper they had heard, and from the remarks of the legal gentlemen who had addressed them, that they all concurred in the utility and necessity for some movement being made in the direction proposed; and really, he must say, that any one who had heard the discussion must be led to the same conclusion. He therefore ventured to move the resolution which had been placed in his hands, and he did so with confidence, because he felt that the discussion which had taken place had elucidated the subject in a clear and satisfactory manner. The resolution was as follows:—

“That the Council of the Society of Arts be requested to appoint a Committee to consider the best means to be adopted to further the object of the proposed Congress at Paris, for the promotion of the assimilation of the commercial laws of the great nations of the world.”

Mr. CHADWICK thought it right, as doubts had been expressed as to the working of an international Congress, to state the precedent of one held on a branch of law affecting commercial intercourse—the law and practice



of quarantine — which had been attended with important success. It was initiated by the French government. They invited each European state affected by quarantine regulations to send one physician, and one consul as a representative of the national interests in international transit, to Paris. The General Board of Health in London had investigated and made a report on the subject of quarantines, and that report, translated into French and Italian, served, to a considerable extent, as the basis of discussion. Nothing could be fairer than the mode in which its propositions, as expounded by Dr. Sutherland, the Inspector of the Board, who attended as the medical delegate from England, were investigated, and its principles adopted by the Congress. The delegates of each state canvassed the facts serving as the foundations of the laws in force in the other. It turned out that the Spanish authorities based their practice on facts supposed to be the recognised results of experience in the British dominions. In reply it was shewn, that these supposed facts had been closely examined in England, and had been proved to be destitute of foundation. The mutual contributions of the state of experience and international information, as well as the points for future observation, made up a large amount of important knowledge to the delegates assembled. The practical result of the congress was, so far as the delegates were concerned, almost unanimous agreement; and, by the governments, the adoption of measures which had extensively mitigated the evils of quarantine—costing this country full two millions per annum,—and the obstructions to commercial intercourse, and the recognition of principles which must lead to the eventual adoption of important physical improvements, more particularly in Turkey, and the seats of pestilence. From having had a share in the direction of the correspondence with the Congress, he (Mr. Chadwick) could state that the business was ably and impartially conducted by Dr. Melier and the French authorities. So satisfied were the delegates with the results, that they unanimously recommended to their respective governments that the congress should be renewed, at a given period of time, for a comparison of their experience in the several states on important points for observation during the interval. Though conclusions were adopted, as to an amended substantive law, and as to a common procedure for its enforcement, yet as the general result tended to the gradual abolition of the present practice, the circumstances were not such as to require any text as a branch of a code, as for a fixed practice. So satisfied were they with the procedure of the congress itself, that they also unanimously recommended its application, by means of other special delegates, to other points of international interests, such as common coinage, weights and measures, and accounts, and regulations of international transit and rights of way. Without going into the peculiar views of Mr. Levi on the question of an entire assimilation of commercial law, he (Mr. Chadwick) was satisfied, from the successful results in respect to the law and practice of quarantine, that the procedure by a congress similarly composed of special men for a special purpose, was proved to be eminently practical for the determination of sections or defined questions of international law and practice. For such questions, the precedent would suggest a congress composed of one jurisconsult from each state, and one political economist, or merchant, or consul, competent to represent mercantile and general public interests. For himself, however, he conceived that Great Britain had within itself and the colonies the means, as well as the greatest need, for the largest and most complete assimilation of commercial law, and that, too, upon principles much more simple than was commonly apprehended by professional men. When he was studying jurisprudence, he had proposed to himself, as an exercise, to take a particular case, comprising a set of common and simple circumstances, as a case of common assault, to let it occur in a churchyard, and

then take it into an ecclesiastical court as a "brawl," and subject it to the peculiar procedure of that court for the investigation of the question of fact, and the determination of a question of law; next, to take the same case into the court of Queen's Bench upon an indictment, and also upon a civil action for damages; further, to raise some equitable question on which the same set of simple circumstances might be carried into the Court of Chancery. He proposed even to adventure to shew the different mode of trying the same by the procedure in Scotland, and thus to display upon the same common circumstances the needless variations in nomenclature to denote the same things, and of procedure, if not in substantive law, for the attainment of the same ends, and the sham science and craft by which the attainment of justice and the course of legislation, upon the most common and simple facts was beclouded and obstructed, under one and the same sovereign authority. It was a large task, but it would indicate great and clear results as to procedure and nomenclature, as well as to substantive law. The mercantile community were put to such exercises, to the obstruction of commerce, to great loss and vexation, without any profit in the way of amendment. As intimated, a mercantile house might on a single contract debt, or a bill of exchange, or a bankrupt's effects, be subjected not only to different procedures, nomenclatures, and substantive law, on common facts within these islands, but out of them, to the nomenclatures, procedures, and the different substantive laws, for the attainment of the same ends, of the chief European nations. They might be placed under a cloud of old French law in Canada, or subjected to the New French law, or the *cinq* codes, in the Mauritius, or be waylaid by the old Roman Dutch law in the Cape or at Ceylon, or beset by the procedures, nomenclature, and substantive old Spanish law at Trinidad. His revered friend, Mr. Jeremy Bentham, had propounded two great rules—which were as efficacious as they were simple, for the clearance of the fields of legislation and administration, which rules should never be lost sight of—for the relief of lay communities from the jungles which covered chicane and depredation; the one was, in legislation and jurisprudence always to do the same thing in the same way—choosing the best way; the other was, always to call the same thing by the same name. Now the application of these simple and popular rules within the Queen's own dominions—after a conflict of multiform procedures, to determine by lay assistance which was the best—would involve the assimilation with the chief commercial continental codes, those of France and Holland, and the largest preparation that could be made for a complete international assimilation of those points which most needed assimilation. The measures already adopted, of a commission for the assimilation of the commercial laws of England, Ireland, and Scotland, was valuable so far as it went, which, omitting the colonies was only halfway, for British commercial interests. It was scarcely possible that the work of assimilation for Great Britain would not have been largely improved by confronting the French commercial jurisprudence and legislation, not to speak of that of Holland. In respect to codification it was often assumed against it, that those who have paid attention to the subject, expect that it will supersede future legislation, whether judicial or popular. Members of a legal hierarchy ridiculed and held up to scorn, as examples of inherent and insuperable difficulty, the failures arising from the want of knowledge of the science of jurisprudence displayed in the first attempts at codification. Those authorities often manifested feelings of aversion to the construction of codes, to popularising the text of the law, and raised objections, not dissimilar to those of the Papal hierarchy against rendering the scriptures popularly accessible in the vulgar tongue. But, although in France there had been a large overgrowth of judicial interpretation, on the text of the written law, in which there were larger defects, there was, on the part of

the laity, a high Protestant feeling for their codes—a liking to having the rights and duties of the chief social relations, and the broad landmarks of the law, brought within their own view. Prussia would have endangered her possession of the Rhenish provinces if she had ventured to take away from the people the Code Napoleon. The institution of that code in Belgium had given France a hold upon that country of greater strength than might have been expected. It might have been well for the improvement of the people of the Peninsula if France had not been prevented implanting it there. At this time Great Britain, with her conflicting provincial laws and customs in her various colonies, was in a condition not dissimilar to that of France, before her provincial laws and customs and legislation were reduced to one common national procedure, and one common text by the Code Napoleon. Viewing the hold obtained by one common, cheap, and accessible procedure, and popularly cognoscible text and body of law; looking to our colonial and commercial interests, it was surely a serious political oversight to allow such questions as the one brought before them to remain unnoticed, and in the state in which they then were.

Colonel SYKES apprehended that the "practical vitality" alluded to in the paper which had been forwarded with the invitations to attend this meeting, consisted in the appointment of a committee for the purpose of discussing the question at the meeting in Paris in May next. The thing to look to was—what would be the practical results unless the parties came to some common consent as to what they were to do. They had had some experience in matters of this kind from the Congress at Brussels. Questions were discussed with ability, ardour, and sincerity, but what were the practical results? None! The present was quite a distinct question from that of a national tribunal for deciding commercial questions by our own laws, amongst our own merchants, which had been referred to by Mr. Lyne. What they had in view now was that they should have such a code of laws—for it must come to that)—that all nations should be content in commercial questions—between the French and English, between the Portuguese and the American, and between the Italian and the German—that all disputes should be decided by one common code, agreed to amongst them all. No doubt the difficulty of the thing was enormous, and Dr. Waddilove had very properly warned the meeting of the difficulty of overcoming national feelings and ancient laws and prejudices, but the object of the meeting was to induce nations to give up their prejudices, and to adopt such a system as would be acceptable to all. The practical results of their exertions might, he admitted, be doubtful; the chance of failure should not deter them from making the attempt, for what enormous prejudices had ere now been prostrated by the perseverance of man, or by the combinations of men. With regard to the advantage of the project, it was universal. They were called upon to give "practical vitality" to it. Would the meeting of a Congress in Paris to bandy words produce "practical vitality?" If they went with a code already drawn up, and said, "Will this be acceptable to you?" the French might say, "Our system is so and so." Then the English might say, "That is opposed to our's;" and there must be a compromise before they could make a law acceptable to both parties. If they talked with a code before them it might be pulled to pieces, but they might be able to amalgamate the fragments; but without that, he thought there was very little hope of useful results. Mr. Levi, from the great attention he had given to this subject, was, perhaps, of all others, the most competent man to draw up the rough draft of such a code, and, with that in their hands, they might go and say—"Here is something to debate upon: take from it, or add to it, as you like."

—Mr. W. HAWES remarked that for his own part he felt much obliged to Mr. Waddilove for calling their attention

to the difficulties of this subject, and he did not think that Mr. Levi himself was so sanguine as to believe that one meeting in Paris would introduce a universal system of commercial law for the whole world; but he (Mr. Hawes) believed that a discussion such as would take place at the proposed Congress would be the means of extending the subject over a larger field than was at present the case, and would tend to remove prejudices, which perhaps existed in this country as strongly as in any other; for they would recollect the attempt to assimilate the commercial laws even of the United Kingdom was attended with greater difficulty than any one had any idea of. But whilst this change was in progress he thought it was a fitting time to take a wider range of the subject, for in so doing we might derive much benefit by consulting with the lawyers of other countries. Dr. Waddilove, in the illustrations he had given, had selected instances perhaps of the least interest in commercial law—a mere nothing.

Dr. WADDILOVE—I contrasted the two cases. One could be easily arranged, whilst there would be considerable difficulty as regards the other.

Mr. HAWES—It was admitted that the practice as to bills of exchange in France and England might easily be assimilated, and if that alone were effected in 1855, it would be something gained. But do not let them drop the project because there were difficulties in the way. He did not agree with Col. Sykes, that the proposed congress on this subject would result similarly to that at Brussels.

Col. SYKES—I say, unless you go with the draft of a code to be submitted.

Mr. HAWES—But there was only a programme at Brussels, though it was a very good one, and he presumed some similar course would be adopted in this instance. Considering the lateness of the hour, he would not detain the meeting longer than to second the resolution which Mr. Hope had proposed.

Mr. CAMPIN said there was one division of this subject which was particularly deserving of consideration, and that was with regard to the patent laws. Mr. Levi had mentioned the dissimilarity of the law of patents in England and in the colonies; and the difficulty of the patent laws in the colonies was even greater than in foreign countries, inasmuch as they could ascertain the state of the law in the latter, whilst they did not know what was going on in that respect in the colonies. With regard to patents in foreign parts, he would mention this fact. If a foreigner took out a patent in England, he could manufacture the object in his own country and import them here, and his patent remained valid; but not so if an Englishman took out a foreign patent. With reference to France and almost all the other continental countries, the article must be manufactured in the countries in which the patent was taken out, otherwise the patent was rendered invalid.

Mr. ELIHU BURRITT, having been invited by the noble chairman to express his opinions, said, he confessed up to that evening he had not paid much consideration to this subject, but he felt interested in supporting the object and tendency of this proposition. He had been engaged in endeavouring to promote the holding of a congress of nations, which might possibly improve the condition of the whole system of international law, and the objects proposed in the able paper which had been read, had been embraced somewhat in that proposition of holding a general congress of nations. He earnestly hoped that it might be held, and that all the benefits anticipated from it might be fully realised. He was sure no circumstance could be more favourable for holding such a congress, and he trusted that the opening of the exhibition in Paris would be the opening of a new era in the commercial world, and that everything which tended to embarrass the commercial intercourse of the world would be abolished.

The Noble CHAIRMAN said, before putting the resolution he would say a few words. In the first place, having at-

tended two Congresses in Brussels, he could speak from experience as to the great benefit derived by the individuals attending them from having the points which they had been accustomed to view with eyes tinged with the particular habits of thought belonging to their respective countries, presented in quite a different light. That was peculiarly the case with the Sanitary Congress, and it was curious what a large number of persons arrived with different habits of thought, who, after they were engaged some time in amicable discussion, were brought to call things by the same name, and very much to agree as to the best thing to be done. It was curious to observe what unanimity, after a time, attended the moving and passing of the resolutions, on which, when they first came together, hardly two persons had the same opinion. A great deal depended upon the thing being clearly stated, and the propositions being properly drawn up: and never were they better drawn up than at these two Congresses, by the eminent men of that small, but well-governed country—Belgium—everything being put not so as to bind the Congress to particular view, but rather to elicit opinions on successive points. He could not agree with the opinion expressed that the direct effect of the Sanitary Congress had not been considerable. He knew that, since his return, he and his friends had been in correspondence with a number of gentlemen in different parts of Europe upon sanitary matters, and that undertakings had been commenced in different parts of Europe, particularly having for their object the benefit of the labouring classes, which would, probably, not have been thought of if they had not been suggested by the details of the benefits brought about—some in this country, and some in Belgium. So also, in the Statistical Congress, which he attended as a humble member of the Statistical Society, considerable results were brought about. There was a hope of getting many facts recorded upon some basis to be agreed upon. There were hopes of an assimilation of the scale of maps, and of the registration of disease, &c.; but, with regard to that of crime, they found that the difference of the laws created an insuperable difficulty. It was difficult to make them understand why the picking of apples *from* a tree should be treated as one offence, and the picking of the apples from the ground *under* the tree as another, and how it was that felony was reckoned more heinous than a misdemeanor, although the moral guilt might be less. When they spoke of the term “codification” he could not do better than quote the words of Mr. Levi upon it:—“As to the word Code, it is only the form in which the law is often embodied in a set of rules or definitions. So when we speak of codification, no reference is made by it to the value of the law itself, but simply to the mode of expressing, publishing, or applying it. The laws of two countries may be assimilated, yet the modes in which they are stated may continue different. The most important point, therefore is the assimilation of the law—the codification of it is a secondary consideration.” It was obvious (continued his lordship) that the codification of the same regulation with regard to bills of exchange, might be different in different countries. The expression of the law might be different, and yet a great boon be conferred by the assimilation of the subject of the law itself. He agreed with Colonel Sykes, that if they did not make a beginning, nothing at all would be done. It was for them to sow the seed, and if they only got a small advantage in trifling points of commercial law, something would be gained; and they might hope that future generations might reap the advantages of further assimilations of laws, as well as coins, and weights, and measures with the increasing intercourse, which would bring different governments and states into closer union, and more intimate connection than was the case with the different parts of the same country a few centuries ago. His lordship then put the resolution, which having been unanimously approved, he added that it only now remained for him to express the best thanks of

the meeting to Mr. Levi for the very lucid and interesting paper with which he had favoured them; and to express a hope that on this committee they might have the valuable—he might say the indispensable, benefit of that gentleman’s services.

Mr. LEVI, in returning thanks for the vote which had been passed, expressed his great gratification at the manner in which the subject had been discussed, and hoped that the members of the Society would keep steadily in view the point to be attained, even though they might, perhaps, think that the proposed Congress would but partially aid its accomplishment. He then read a petition to the Right Honourable the President of the Board of Trade, which had been signed by the Earl of Harrowby, Viscount Ebrington, M.P., Sir George Goodman, M.P., Mr. R. P. Collier, M.P., Q.C., Mr. W. Hawes, Dr. John Lee, Mr. F. Bennoch, Colonel Sykes, F.R.S., Mr. T. Winkworth, Mr. H. T. Hope, Mr. F. Lyne, Mr. E. Chadwick, C.B., Rev. W. Elliott, M.A., Mr. Charles Boyle, and others, to the following effect:—“The undersigned having learnt that his Majesty the Emperor of the French has graciously taken a personal interest in an address transmitted by the Edinburgh Society, for promoting an International Code of Commercial Law, suggesting to his Majesty the expediency of seizing the occasion of the Great Exhibition in Paris, in 1855, for the holding of a Congress of Deputies from all civilized nations, for establishing the basis of an International Code of Commercial Law, take leave to express their conviction that the proposed Congress would be of the highest importance for ascertaining the practical working of many important and controverted principles of Mercantile Law in different countries; and also for laying the foundation of measures of a comprehensive character, and of great utility to the commercial world. The undersigned, therefore, respectfully suggest, that her Majesty’s government should represent to the government of his Majesty the Emperor of the French, the interest with which the proposed Congress would be regarded in Great Britain, and their readiness to send representatives to take part in a Congress which is calculated to produce much benefit to jurisprudence and commerce, strengthen the amity now happily existing between France and Great Britain, and assist the extension of commercial relations between all civilized nations.” This petition would remain with the Secretary for signature for a few days.

Mr. COLLIER, M.P., proposed a vote of thanks to the noble chairman, for the ability with which he had presided over the proceedings, which having been accorded by acclamation, the meeting adjourned.

## TENTH ORDINARY MEETING.

WEDNESDAY, FEBRUARY, 7, 1855.

The Tenth Ordinary Meeting of the One Hundred and First Session, was held on Wednesday evening, the 7th inst., Thomas Field Gibson, Esq., F.G.S., in the chair.

The following Candidates were balloted for and duly elected ordinary members:—

Colman, Jeremiah James.	Pennell, Edmund, C.E.
Gwynne, James Egleson	Roden, William Sergeant.
Anderson.	Staley, Rev. Thomas Nettle-
Longstaff, G. Dixon, M.D.	ship, M.A.

The following Institution has been taken into Union since the last announcement:—

385. Shotley Bridge, Mechanics’ Institution.

The Paper read was  
THE COMMERCIAL CONSIDERATION OF THE  
SILK WORM AND ITS PRODUCTS.

By THOMAS DICKINS.

Having been honoured by your Council with an invitation to prepare a paper on some branch of the Silk Manufacture, I have selected for your consideration this evening "The Silk Worm and its Products," as viewed in their commercial aspect. This part of the subject is both primary in interest and illustrative of the first process of the silk manufacture.

I make no pretensions to literary composition, and therefore have ventured upon my task not without some diffidence, yet with the hope that an honest tale will tell well though plainly told.

I doubt not you are familiar with the source whence all silk is derived, viz., the silk worm, the *Bombyx Mori*. Its natural history I will not presume to enter upon, but will confine my remarks chiefly to the beautiful results and commercial value of this, perhaps, the most interesting of the insect tribe of animated nature.

Though we are all conversant with and highly appreciate the costly material we obtain from this little insect; though it engages, perhaps, 50 millions of our capital, and employs and supports about one million of our population, yet we know but little of its habits, and still less of the nature and mode of obtaining its valuable productions. All this has hitherto escaped the penetrating eye of English interest, which has visited, searched, and valued almost all corners and productions of the globe.

Our merchants import cotton, wool, and flax, in their raw or primitive condition. The manufacturers operating on those fibrous materials, aided by the progressive skill and ingenuity of our mechanists, have so greatly improved the quality of their productions, that they now bear no resemblance to the imperfect goods made, say, 50 years since. They have improved in quality and immensely increased in quantity, and though they have diminished the price of their manufactures, they have added enormously to their own wealth, and to that of the kingdom in general. As evidence I refer you to the palatial edifices of Manchester, Leeds, Bradford, and Glasgow, and their not less important, though tributary friends, such as Liverpool and Birmingham.

We can receive the short fibrous materials of the antipodes, and return them in goods at less cost to the natives than their own clumsy manufactures.

During this golden age, how has the silk trade fared? The worm has given us the most perfect and the most beautiful of all fibres,—for none yield such a continuous length,—each worm affording about 500 or 600 yards of usable quality, but owing to the defective process of the first operation, we have had a raw material so comparatively imperfect, that no industry or skill could well remedy the defects. Such as our raw material was fifty years ago, such (for any improvement is scarcely to be recognised) is it now, and as a natural consequence, our silk manufactures, excepting in artistic beauty, remain equally stagnant; indeed, in intrinsic value, they have deteriorated.

Silk manufacturers, with a view of cheapening their productions and extending their trade, have resorted to many ingenious expedients, but their efforts, I consider, have been directed to the wrong points. The basis of their manufacture, the raw material, should have had their first attention towards improvement, whereas, the pressure of their economy has weighed chiefly and heavily upon the operatives, especially the poor weavers. You cannot visit the wretched habitations in Spitalfields, and notice the joyless and pallid faces of their inmates, without a conviction that there must exist some wrong principle in the very nature of the industry which doles out to them so scanty a subsistence, and retains them in the slough of so much despondent poverty. Although they operate upon a very valuable article of luxury, their remuneration and

position among the working classes, is far below the average of that of other artisans, and yet the beautiful productions from their miserable garrets, adorn chiefly those to whom want is never known.

I venture to assert, that the average weekly earnings of the silk weavers of this country do not amount to 10s. each. I do not, however, believe that manufacturers can afford to pay more. I know of no other remedy than an extension of the silk trade, and, consequently, an increased demand for labour. No wonder, then, that the silk trade has made less progress than any other branch of British industry, and that it continues so unhealthy as compared with the other staple manufactures.

Let us now consider the entire process of manufacturing the raw material. Commencing with the worm, our young people can claim the most acquaintance; with them it has always been an especial favourite; they have had a delight in rearing it, and their reward for so much care and attention has been a few small skeins of golden-coloured silk, deposited generally between the leaves of some valued book, or among the archives of their curiosities. In fact, no practical result has hitherto attended the rearing of silk-worms in this country. They have been no other than a child's toy from Covent-garden. I will invite your attention presently to a more promising result of silk culture here; but we will first examine its nature and operations abroad.

Silk is chiefly produced in France, Italy, China, Turkey, Spain, Greece, India, Persia, and in all countries where the mulberry tree thrives. The eggs are invariably of about the same size—that of a pin's head; but the worm prospers according to its good and healthy living, climate, and education.

As soon as it has emerged from its shell it eagerly seeks its food, and, except during its periods of torpor and changes of garment, is continually feeding, and rapidly progressing in growth, until it reaches maturity. From infancy to its old age, it enjoys but about five or six weeks, when it will have attained a length exceeding three inches. It then commences the shroud, to serve it as a living sepulchre until the period of its second transformation,—that shroud is the cocoon, the money-value of the worm, and the source of so much wealth to all nations who cultivate it.

When prepared to spin, the worm appears impatient and restless for a day or two, and then seeks some favourable position whereon it may securely construct its habitation. In the reeling establishments in France and Italy, called filatures, the rooms are lofty and well-ventilated, and the temperature kept at a moderate and uniform degree. The worms are hatched simultaneously with the foliage of the mulberry, whose leaves, as frequently as needed, are supplied to the young cormorants, the refuse leaves and matter being at the same time removed. At this early period of their growth extreme care is necessary, so much so that attendance is bestowed upon them night and day, cleanliness and a pure atmosphere being most essential; any serious neglect of the sanitary arrangements would probably be fatal. They are reared—educated is the technical term—in trays placed on shelves, of which there are various ranges, and there they remain, passing through their several periods of rest and change, until they cease feeding altogether, and evince an inclination to spin, or, as the cultivators say, "to mount."

The facilities for spinning are afforded by dry thorns and rushes being interlaced and arranged in arches over the trays, so that the worm may easily ascend. Each selects its resting-place, and there commences and completes its costly domicile.

It frequently happens that two worms will decide upon one and the same spot, and begin spinning *dos-a-dos*, until they find themselves enveloped in their joint web; they, however, proceed with their labours, and work with such regular speed, not over-running each other, that the two threads will, in the subsequent reeling, wind off to-

gether. Such cocoons are termed *doubles*, and are of less value than those composed only of a single filament. I have here a specimen of cocoons "*au naturel*," obligingly furnished me by a gentleman in Cornwall, Mr. J. Hodson, who, imbued with the spirit of Mrs. Whitby, has most perseveringly for years cultivated the worm and its food. These are a portion of his productions of last year, when he was so successful that he did not lose one worm out of about 1,200. I have reeled a considerable number of his cocoons, similar to these, and pronounce them equal to the average good quality grown on the Continent. Mr. Hodson has thus practically demonstrated that very excellent silk may be produced in this country,—a result entirely confirmed by an opinion given me by Sir J. Bowring, just previous to his departure for China, that nature has been so considerate and bountiful with regard to the silk culture, that she has provided a mulberry tree for every moderate clime, and that the entire temperate zones have mulberry trees indigenous to their respective localities.

Mr. Hodson has tried various kinds, but, after all his experiments, he is, I believe, very favourably disposed to our common black, as being the most hardy, and therefore the most suitable for our climate. His opinion is, that it may, in favourable localities, be very advantageously and profitably cultivated. The subject is under consideration at present, and I am sure you will agree with me in wishing every success to its promoters.

One or two attempts were, many years since, made by public companies, and the royalty of England has at times afforded its special patronage, but the results were unfavourable, owing to the subject not then being well understood. They planted the wrong trees in the wrong places, had too expensive a management, so that their finances became exhausted before they could realise any of their efforts. I recently asked Mr. Hodson for his opinions on this head, and I beg to relate them in *extenso*.

"The results of experiments in this country, prove that an attempt on a limited but sufficient scale, need not be a failure—and, if only as a means of bringing the subject practically under the notice of the emigrating classes to our colonies, and thus eventually furnishing a larger amount of the raw material to our manufactures, the undertaking would acquire a national importance. That our climate generally suits the healthy organisation of the silk worm, admits of no doubt, the only difficulty has been the ready supply of food. The white species of mulberry adopted here, in consequence of the preference given to it in France and Italy, has not yet a fair trial. In suitable soils and aspects, and receiving similar fostering care and attention as abroad, the plant would thrive well, and though in rapidity of growth it might not rival that nurtured under a more fervid sun—its nourishing and silk assimilating qualities may equal, whilst its durability of existence may surpass, its southern congener.

"Respecting the black species of mulberry, eschewed by our neighbours as a coarser-leaved kind, and, on that supposition, neglected by us, we have everything to hope from. The principal drawback apparently—and this may prove unfounded in a great measure—is its tardy propagation and growth. For the space which its head of branches occupies, there is such a concentration of leaves, as to make it highly probable that in a few years, an acre of land planted with this kind would yield 3 or 4 tons weight of leaves; and the quantity would annually increase. A ton of leaves would produce, with tolerable management, fifteen pounds worth of silk. A single tree in France, of large size, will sometimes pay its owner 100 francs. Labour would form a prominent, but in this country, not an undesirable item of expense. The greatest part could be accomplished by girls and women. The net profit per acre realised by continental culture, after many inquiries, has not yet been ascertained by the writer—nor does he think it can be easily obtained, except by personal and careful investigation. It cannot but strike any who read the re-

ports on the subject, and know the proceedings in practice, what little progress has been made by the main body of cultivators, during the century or two in which it has formed a part of their agriculture."

I have rather digressed from my subject,—but Mr. Hodson's success has been so meritorious that I could not hesitate to bring it prominently before you.

We left the untiring artisans constructing their cocoons, which they managed thus:—A silken filament, coated with gummy saliva, exudes from each of two orifices, one at each side of the mouth; these unite immediately and are attached to some part of the twig; the insect then inclines its head to another part, and again attaches its web, and so forms a line; this is repeated from corner to corner, and round and about, and back again, until sufficient outwork be made to support the builder upon its own structure—it then commences the continuous thread, which is placed, not in revolutions, but in a repeated series of the figure 8—the whole being systematically and beautifully arranged by aid of its soft fore-feet, which smooth and regulate the progress of the web. This continues until the worm has formed one entire round of its oval vault—the outer course; it then proceeds in a similar way for another, and for three or four more, according to its material and vigour—when, having exhausted its strength and inward treasures, it weaves its inner lining, which is so very fine and soft that, though a continuous thread like the outer envelope it cannot profitably be drawn off in reeling. Having completed this process, which occupies three or four days, the worm, then being shrivelled up to one-fourth its former size, ceases all labour, shuffles off its caterpillar coil, and becomes an aurelia, in its silken bed, suspended in its natural bower.

It is then the rude hand of man commences operations—ruthlessly are the cocoons removed and eagerly examined. A portion of the finest are laid aside for reproduction, the remainder are exposed to a heat, by steam or otherwise, sufficient to destroy the vitality of the chrysalis, after which they are ready for being reeled. Such as were laid aside for reproduction wait the metamorphosis of the grub into the butterfly, which, naturally furnished with a solvent for softening its hitherto protective casing, is thereby enabled to escape from its grave—but only for a short period. It flutters about for a few days, during which the female deposits several hundred eggs for the reappearance of its species during the ensuing season; and then, all duties being fulfilled, it droops and dies at last.

Such, in almost all countries, is the general progress and development of the silkworm.

In China and India the silk cultivators have two or three broods in the course of the year, which is the reason, I think, why their cocoons yield so much less than do those of Europe—the species, probably, is reproduced too quickly. The quantity of silk that may be obtained in any country depends upon the comparative supply of food. A few ounces of eggs suffice for a very large yield of silk, but the supply of leaves regulates the quantity, and consequently the value.

It would be of great importance if the worm could be reared upon other than its natural food. I was much pleased with reading in your Journal that success is attending the introduction at Malta of the castor oil plant, and that a silkworm—the *Bombyx Cynthia*—thrives well upon it. Within these few days I have received from the Secretary to the Society of Arts at Malta a small box of cocoons spun by these worms—here is a sample of them. I regret having to declare that I consider the reeling of them quite impracticable. I have made a very careful attempt, but, owing to the perforation and malformation of the cocoon, the filaments broke so frequently, that any remunerative result was out of the question. I, however, hope that some difference in treatment and education may induce the worms to produce a more perfect cocoon. I shall continue my attention to the subject.

Port Natal promises soon to become a silk-growing district. I received, a few weeks since, a sample reeled there. The quality, or, rather, the nature, is excellent; but the reeling is very defective, the result of inexperience. I am informed that the mulberry takes so kindly to the locality that small plants, of a few inches, attain in twelve months a length of five or six feet. This valuable introduction will soon augment the riches of the colonists. Thus there is every prospect of the silkworm considerably extending its race; in fact, it will naturalise itself in any country where well and properly nourished and carefully educated.

Having considered the nature of the worm, we will now scrutinise its products, especially the methods of reeling and spinning the silk threads required by the manufacturer.

Here are specimens of cocoons from various countries—the Bengalese are very poor and degenerated—the culture must be very much neglected; the Chinese are small, but of very good and firm texture; the French are very fine, and so are some of the Syrian, which present a mixture of very good and inferior, proving what cultivation may effect there; the English are equal to any. The mode of reeling generally practised is about the same in all foreign countries, varying only with the care and the machinery employed, which is more or less primitive and imperfect—the only object apparently the reelers have had in view being the production of silk in skeins, leaving all subsequent processes to the manufacturer.

The cocoons having been properly sorted, *i.e.*, the doubles, the perforated, the diseased, and inferior, laid aside for separate treatment, the sound ones are proceeded with. The object of the first process is to unwind the thread so systematically and ably arranged. The worm is a perfect spinner; our comparatively clumsy treatment mars much of its natural and intrinsic value.

The reeling commences:—A handful of cocoons are placed in a basin of nearly boiling water, and briskly agitated with a few twigs formed as a wisp. In a few minutes the exterior fibres become loosened, and adhere to the wisp. The agitation is continued until the waste is all detached, and the ends of the continuous threads are attained. By these the cocoons are drawn to the edge of the basin, excepting so many as are required to form the intended thread of raw silk. The finest and best thread (as Italian or French) will be composed of 3, 4, or 5 cocoon filaments, other threads of 10 or 12 such, up to 20 or more, according to the purposed size and quality; the greater difficulty being to reel a fine thread, the very best cocoons are employed for such, hence the finer the silk the more valuable it is. We will suppose a thread to be formed of 4-5 cocoons, *i.e.*, 4 cocoons yielding good firm filaments, or occasionally a 5th added where the remaining four are weak or nearly run off, the inner filaments of the cocoons being finer than the outer ones. An average size is therefore obtained by using occasionally one more or less. The four filaments being united into one thread, two such threads are reeled simultaneously, and occupy the attention of one person, (usually a young woman). She passes them through separate eyes, and then twists them together, usually by means of a simple self-acting apparatus, so as to give about 100 revolutions; the ends are again separated, and each is conducted by a guider to the reel behind, the attendant sitting between the basin of cocoons and the reel to which the threads pass over her head. The partial twist is not permanent, but is necessary to combine and consolidate the filaments into one thread. The reels (for several are attached to one shaft) then being put in motion, either by hand or steam power, the threads are rapidly drawn off, and each cocoon, as it becomes exhausted, is replaced by a fresh one. This process is continued until sufficient silk is wound on to form a hank, which, on being removed from the reel, is made up into a skein. A quantity of such is packed into bales, in which state it is imported by our merchants and manufacturers as raw silk.

In China, and almost all silk countries—Italy and France excepted—the reeling is very negligently accomplished. Ten cocoons, or more, will be taken as the commencement for a thread. The reeler will work away without heeding the rupture of a few filaments, and will then piece up several in a lump; the result of which is that all our China silk varies in places 50 per cent. in size, and instead of being of the finest and best quality, as the cocoons would permit, is seldom worth more than two-thirds the value of good French or Italian.

The size or substance of a silk thread is usually estimated by deniers, an Italian weight, equal to about a grain. The standard of measure is about 400 yards—that length of a single filament will weigh two deniers from China cocoons, and 2½ from French or Italian. A 10-denier silk will thus be the combined thread of 4 or 5 cocoons.

A proof of the defective reeling in China is evident from the fact that, though they possess the finest cocoons, they do not produce fine silk.

The silks reeled in Greece, Asia Minor, and Syria, were, until recently, only known as very inferior in quality; but during the last few years the cocoons of those countries have been reeled there by experienced reelers from France, or have been imported by the French. As evidence that Chinese cocoons, which hitherto have only produced us a coarse and uneven thread, will yield the best and finest silk, I have here, for your inspection, a specimen equal to the best and most costly Italian silk. It has been reeled and spun in one operation, direct from Chinese cocoons, on to bobbins (of which this is one) at my own works, on an improved and patent process, to which I will presently allude. Any good cocoons, from whatever country they may come, may be made to produce good silk, and of the same quality, whether reeled in the country in which they were produced, or imported and reeled in another—the machinery and care being, of course, equal in both. It is, therefore, indisputable that silk reeling may be considerably improved, and that extra skill and attention will amply repay the reeler. When the cocoons are exported very great care is requisite that they may be thoroughly desiccated, in which state they may be press-packed without injury; for, however flattened and deformed, they, like sponges, will resume their original form on immersion in hot water. In drying they lose about two-thirds their original weight, so that 4 lbs. of dry cocoons will yield about 1 lb. of silk, whereas 12 lbs. of the undried would be required.

The waste made in reeling is taken up by another branch; it forms the raw material for silk shawls, spun silk handkerchiefs, stockings, mixed goods, &c. It is carded, spun, and manufactured into threads, on the same principle as raw cotton is converted into yarn. Here are a few specimens of the several processes, kindly furnished by Mr. Briggs, of the Castleton Mills, near Rochdale.

A great fact here will, perhaps, be new to many of you, that from the waste silk made by the reeler, the spinner in this country will first chop it into lengths of about three-quarters of an inch, and will produce a more even-sized thread therefrom than will the reeler from his continuous fibre of 500 yards.

The remaining product is the chrysalis itself. Even that is of some value, for it forms an excellent manure, and, I expect, will not be bad feeding for ducks and geese, for I have tried them at my farm, and have found them not objected to. I do not know but that they may be a luxury. Thus, the silk worm and its products have all a remunerative value.

The question now most seriously presents itself, why cannot we reel silk in this country? My immediate and practical answer is—there is no real difficulty to prevent us. Because it never has been done, we have accustomed ourselves to believe the object unattainable. Almost all persons engaged in the silk trade had deemed it impossible, simply because they did not see how to place the egg the right end upwards.



The title whereby raw silk was known, as French, Italian, or China silk, implied that such silk was the produce of such country.

I have passed through many of the reeling districts of France and Italy, and when I have inquired why we could not reel here, have invariably been told that the cocoons could not be transported from one country to another; that a southern climate was most essential; that reeling could not properly be carried on in wet or damp weather, and that even a cloudy day affected the quality of the silk. Such were the objections so universally given and believed, that no silk merchant or manufacturer in this country (with one exception, I believe,) ever thought of silk being otherwise produced. The French reelers, however, partially solved the question. Wanting more silk than they were producing, they directed their attention to the rich and beautiful plantations of Greece and Syria. Commercial and profitable considerations soon taught them how to dry and pack the cocoons without injury. In a very short time they established houses in those countries, and imported thence immense quantities of cocoons, and reeled them in their own filatures, so that our manufacturers have been using many thousand pounds of so-called French silk, reeled from Greek or Turkish cocoons.

So much for one objection. We will now dispose of others. A southern climate is not at all essential, inasmuch as all silk is reeled in water, and that we can prepare soft or hard, as required. We can likewise create any climate in our factories—moist, dry, hot, or cold. All this I have proved at my own works, where silk-reeling is now practically in operation, on a new system, promising unusual advantages.

We are indebted to Mr. John Chadwick, of Manchester, silk manufacturer, for the invention. He originated the principle of this new process, and confided it to me for development into practice. We have jointly patented the system for this country and elsewhere.

I should here state that your Council invited Mr. Chadwick, as well as myself, to read a paper before you on the silk manufacture. Had he done so he would have explained the process, and the reasoning by which he had arrived at it, but circumstances having occurred to prevent him, I have assumed the pleasure and the responsibility of bringing the invention before you. I would add that whatever merit may be ascribed to me for carrying out the invention of producing thrown silk direct from the cocoons at one operation, from its primitive form to its present practical efficiency, the far greater merit of having originated it is due to my colleague.

I will premise my explanation of our improvements with a cursory view of the usual silk-throwing operations.

We have seen that the first process of silk thread making, is the reeling into a hank such a number of combined filaments as will produce the required thread. The next process, which is the first in the throwster's hands, is to again place the hank upon a reel and rewind it on to a bobbin. So much waste, as you may expect is therein made, that the cost including waste is at least from 1s. 6d. to 3s. per pound. The third process is to clear the thread from all superfluous knots and imperfections made in reeling; this is usually managed by rewinding the thread through a groove, or cleaners, so adjusted as to stop any lumps or gouts that would otherwise pass on. The fourth process spins the thread, if intended for organzine, which is the warp or longitudinal threads of silk goods; this spin is, on an average, of about 15 turns per inch, and the object is to bind up and consolidate the filaments composing the thread. The fifth process doubles the threads so spun. The sixth spins the doubled threads the reverse way of the single ones; this induces the threads to hold more firmly together and not to untwist. The seventh process (sometimes united with the sixth) winds off the skeins ready for the dyer. These operations of reeling and throwing cost altogether 8s. to 9s. per lb., thereby considerably enhancing the cost of our silk manufactures. When the thread is not intended for organzine, but is required for

tram, *i.e.*, the cross threads of silk goods, the fourth process is omitted, no spin being required in the single thread.

Our new process dispenses with two or three of the operations I have enumerated. We soften and prepare the cocoons nearly as usual, and reel together any required quantity; but instead of winding the silk at excessive speed, and consequently with much tension, into hanks, we wind it direct and slowly on to bobbins, and in its course thither impart by suitable means any amount of spin required, whether to form a tram or an organzine thread. The combined thread very seldom breaks in its progress to the bobbin, the separate filaments only occasionally, but as the cocoons successively fail or are wound off, they are replaced, the filament of the new cocoon attaching directly to the others, and being at the same time incorporated with them by the continuous spin. The thread, being thus maintained in its strength and size by splicing in the new filaments as needed, is free from all the knots at present inevitable in raw silk winding.

Herein is the leading feature of our improvements, that we dispense altogether with the loose hank of raw silk, and spin the thread at the same time that we reel it. Here is a model showing partly the process whereby a single thread may be reeled and spun simultaneously; it is somewhat rude in construction, but is sufficiently correct to exhibit the principle, though of course wanting in much that is indispensably necessary for working it practically on large frames, such as the means of sliding the bobbin up and down the spindle, so that the thread in winding on may be equally distributed; likewise a disengaging motion attached to each spindle, whereby any bobbin may be shunted in or out of gear without stopping the remainder. This motion is absolutely requisite, as it is of the utmost importance that the machine be stopped as seldom as possible. There are likewise various other appliances for economising labour, and conducing to profitable results. When duly at work the bobbins revolve at a speed of 3,000 revolutions per minute. You will at once perceive that we are much indebted to the cotton spinning machinery, and you will recognise the ordinary spindle and flyer, though differently adapted. It is very simple, and yet a most effectual and complete method of winding and spinning simultaneously.

The bobbin and flyer revolve in the same direction, but the former at a given ratio, quicker than the latter. The difference of speed gives the required quantity of spin to the thread.

I should mention that reeling and spinning direct from the cocoon may be effected by other methods under our patent, but we prefer and recommend that which I have endeavoured to explain. We thus, in one operation, produce either a tram thread complete, or we at one step reach the third or fourth process at present required for organzine.

As I am so personally interested in the success of our new process it scarcely becomes me to dwell much upon its merits. My opinions, however, being subject to your discussion and criticism, I will not hesitate to enumerate some of the advantages over the usual method, I contemplate may be derived—*ez. gr.*—

1. A more complete extraction of silk from the cocoon, by reason of a more steady process of unwinding.
2. A regularity almost mathematical.
3. A greater amount of tenacity and elasticity in the thread.
4. The almost total abstraction of "gouts and knots."
5. Saving of cost of winding and of all waste made therein, producing in the aggregate an economy of several shillings per pound, with a superior quality. Instead of requiring experienced women as reelers, young children between 11 and 13 can with ease manage the whole process. A few days' tuition renders them quite *au fait* at the business.

So steady is the working of the system that we can reel and spin with facility a thread of organzine nearly one-half the size of any, I believe, hitherto produced, one



lb. of which will extend in length about 200 miles. Such a thread will open a new field to the manufacturers of lace and gossamer fabrics. I have stated that we prepare the cocoons nearly as usual,—the difference is, that to facilitate the reeling, we add a little soap to the water, whereby we detract from the brightness or polish of the gum of the silk. Very great, though undue, importance has been attached to the lustre of raw silk. On reflection and examination it will be evident that such outside varnish does not in the slightest degree affect the silk within, for it is merely a resinous gum which entirely leaves the silk when subjected to the necessary boiling off in dyeing. This gum forms 25 per cent. of the gross weight of the thread. Its colour is yellow or white, but all silk when deprived of such gum is beautifully brilliant and white. One of the chief advantages this new system offers to the manufacturer is the control of his raw material, the means whereby he may produce regularly any size and quality of silk he may require, the cocoon being his raw material, as cotton wool is to the cotton-spinner;—whereas, at present the raw material of our silk manufacture is a thread produced at the caprice of the foreign reeler, without any consideration or even knowledge of the purpose to which it is destined. So keenly has this anomaly been experienced, that several of our first manufacturers now buy their cocoons, and have them reeled in France or Italy to their own special order. We all acknowledge the world-wide celebrity of many manufactures, where a certain degree of excellence having been once attained, the reputation has been maintained by a careful adherence to the quality which produced such universal approbation. Now, however talented and skilful the silk manufacturer, he has not had the same opportunity of "letting well alone." One bale of silk may have worked to his satisfaction, and have produced exactly the desired result, the next might be quite the reverse.

The continental reelers are very sensible of the imperfect condition of their business and need of improvement. A silk journal, *Le Commerce Sericicole*, so abounds weekly with suggestions on the most trivial detail, that any stranger reading it would suppose silk-reeling to be quite a modern invention. As evidence of the extreme importance attached to a very trifling advantage, a patent was taken out in France, in 1853, by Mons. Alcan, a distinguished professor, and director of the Conservatoire des Arts et Metiers, for improvements, in softening and preparing the cocoons. M. Alcan told me that he had studied the subject for years.

I believe our system will prove a great national advantage, that it will revolutionize the silk trade, and considerably extend its operations, but as in all other revolutions, and this is one of matter, time is necessary for development in proportion to its magnitude.

One great problem to be solved lay in the question of a supply of cocoons. That apparent difficulty is quickly disappearing. I have received them from China, India, Syria, Greece, and Spain, and am in correspondence with some of the principal houses either in, or connected with, those countries, from whom I receive the assurance that any quantity may be procured, and laid down here at a price that will compete with the French reeler. One merchant in Manchester has already imported them on his own account. The silk producing countries of the world far exceed in extent the cotton growing districts, so that encouragement alone is needed to increase the supply of cocoons, and in course of time render silk not only a luxury, but a comfort, within the reach of all classes, a probability not at all visionary, considering that the period is not so remote when a pound of raw cotton cost more than does now a pound of cocoons. But prior to the realisation of these desiderata, much prejudice has to be overcome. The fallacious theory of centuries must vanish, the reeler and the manufacturer must no longer be strangers to each other, as they now are. The cocoon producers generally have yet to hear of and learn the value of this new market.

Existing defective systems have gradually to give way to the improvement. The interests of some are opposed, and therefore will not recognise it, but its onward course, however slowly, must surely continue, because interest and desire of gain, which governs all commercial transactions, will never abandon the pursuit of a profitable occupation.

If labour form the wealth of nations, the political economist would favourably regard our innovations, for, as we consume in this country about six million pounds of silk annually, much of which may in course of time be reeled here, additional employment might thereby be found for at least 10,000 children. A laconic remark, made by an eminent French reeler, may be interesting to you. After minutely inspecting the operation and expressing his satisfaction, he compared the present position of the silk trade to that of France on the 27th February, the eve of the revolution.

There are other pleasing reflections in the fact that Syria may become the chief market for our raw material. One of the first merchants of Beyrout, writes me that about 2 million pounds of cocoons are annually produced within 10 hours' distance, *i.e.*, between Sidon and Tripoli. A very pleasing writer, the author of the "Thistle and Cedar of Lebanon," confirms this opinion, and recommends emigration thither; and he adds that the silk culture will be found far more profitable and certain than gold seeking. Thus the Holy Land, the birth-place and the cradle of the most important events yet known to the world, may be again enriched, and so recall and gather together her long-lost people—all under the inscrutable providence of the Almighty, working by the humble instrumentality of the Silkworm and its Products. Truly, man proposes, and God disposes.

#### DISCUSSION.

Mr. LE NEVE FOSTER (Secretary) stated, that as Mr. Dickens had referred in his paper to the accounts published in the Journal of the Society, relative to the *Bombyx Cynthia*, or Eria silk worm of Assam, and to its introduction into Malta and Italy, it might be useful to give a short notice of the information which had reached the Society from his Excellency Sir William Reid, the Governor of Malta. It appeared, then, that through the laudable efforts of Mr. Piddington, of Calcutta, aided by the directors of the Peninsular and Oriental Company, his Excellency the Governor had succeeded in obtaining, after many unsuccessful efforts, sound eggs of the Assam silk worm, called in that country the Arrindy, Aria, or Eria, and by naturalists the *Bombyx Cynthia* and also *Phalæna Cynthia*. These eggs arrived in Malta on the 2nd of December, 1853, and were placed under the care of Dr. Frendo, at St. Antonio, who obtained from them upwards of 600 worms. The first which were hatched died apparently from cold. But after a fire was kept in the room—so as to preserve a temperature of from 58° to 68° Fahrenheit, very few died, and ultimately none. These worms were fed exclusively on the leaves of the castor oil plant, (*Palma Christi*), the *ricinus communis* of botanists. The worms having thus passed through all their mutations in Malta in a healthy state, a second generation, from eggs laid there, was hatched. Cocoons sent from Malta to the Agricultural Society of Turin, also produced moths. Eggs were likewise sent to Rome and other parts of Italy. Thus this insect could be transported to, and successfully reared in, latitudes differing as widely as those of Turin and Assam. The *Palma Christi* (*ricinus communis*) was said to take well in Piedmont. In the province of Nice, in the Island of Sardinia, and in the other more northern provinces of Italy, it also grew luxuriantly. Considerable progress had been made in the art of reducing the cocoons into thread. Mootas, very similar to those received from Calcutta, had been produced from Malta cocoons, and these had been spun, by means of distaff and spindle, into thread of a very superior quality, which had been converted into specimens of

knitting, netting, and crotchet. A specimen of the latter work was exhibited. The French Government had applied, through their Consul in Malta, for a quantity of eggs both for France and Algeria; and through the statements published in the Society's Journal, an application had likewise been received by his Excellency the Governor, from the Agricultural and Horticultural Society of Grenada, in the West Indies. Both of these applications had been complied with. Only that morning he had received a communication from Grenada, stating that the silk worms had gone successfully through their several stages, and eggs laid there were now hatching. The first supply was received there on the 22nd of November last. From these 1,200 worms were raised. They began to spin on the twenty-third day after hatching, and the cocoons being kept undisturbed, the moths came from them, laid, and were now dying (10th January). The Grenada Society was particularly anxious to receive information as to the mode of treating the cocoons, so as to render them fit for sale or shipment to England. He had also just received from his Excellency Sir William Reid, through the Colonial-office, a further despatch, accompanied by a box of specimens of the silk prepared in Malta from the Assam silkworm, by Mr. Frederick Lotteri, an Italian gentleman, together with a letter, report, and memorandum, collectively embodying the results of that gentleman's experience on the subject. The object which Mr. Lotteri had in view, and which he hoped to attain, was not precisely the cultivation of the new insect, considered in its phases, its developments, and its transformations (points which were for the most part well known), but rather to study carefully and investigate the important producing powers of so valuable an insect. According to communications which appeared in the *Official Gazette* of Turin, 30th December, it seemed that he had resolved to endeavour to coerce the worm into forming its cocoon hermetically closed, like that of the mulberry worm. By this method he hoped to obtain a continuous perfect thread, unmixed with portions of waste caused by the unequal action of the worm in spinning. Mr. Lotteri's report was as follows:—

"I am indebted to the kindness of his Excellency Sir W. Reid, the Governor of this island, and the warm promoter of any undertaking which tends to the development of the industrial and commercial prosperity of his country, for the many opportunities which I have enjoyed of pursuing my investigations in reference to this new species of silkworm, which is being reared at his villa of St. Antoine, and which, since its introduction into Europe, has given rise to many scientific researches. I have studied these insects in all their phases and transformations, and, after careful observation, I have endeavoured, by treating the cocoons according to the old method, to test the productive powers of this silkworm.

"I sought the end of the thread so as to unwind the cocoon—for I have always considered it as unsatisfactory, looking at the value of the insect, to follow the method pursued in India, of soaking and rubbing the cocoon in order afterwards to spin it, like flax, cotton, and other vegetable substances. After much labour I succeeded in obtaining a little silk from the cocoons, and I forwarded the product to London. I had tried several times to obtain the silk with less trouble, but was unsuccessful, and for a time I considered that my efforts must end here, as I felt persuaded that the results, up to this period, were not proportionate to the expenses, loss of time, &c. My method for procuring silk from the cocoon is as follows:—

"1st. I stripped the cocoon of its outer covering, considering the latter to be merely a tissue of coarse waste, intended simply as a support for the other portion. After having analysed the resinous and viscous substance of the new cocoon, which is much harder than that of the mulberry worm, I thought it best to lay aside the use of chemical preparations, being convinced that the unreeling of the thread could be facilitated by the simple means of

water heated to two different degrees of temperature, using it first in a boiling state, and afterwards of a heat not too great to admit of the hand being immersed. This system I found preferable to any other. I then took two flat dishes or basins; one, containing boiling water, I made use of to cleanse the cocoons and to enable me to get hold of the thread; in the other I afterwards placed them for the purpose of reeling. As these cocoons have an aperture, in which respect they differ from other kinds, I took the precaution to have flat dishes or basins made expressly for the purpose, one inch deep, so as to avoid the possibility of the cocoons sinking to the bottom of the vessel in case of the thread breaking, an accident which would otherwise have caused some difficulty.

"Up to this time, I was tolerably satisfied with my manipulation, and I anticipated further and better results, when I perceived that the thread never broke on the edge of the aperture in the cocoon, where the worm began to deposit waste; but I was discouraged on finding that the lengths of thread were continually coming to an end, only to begin others equally short, and that at frequent intervals a quantity of waste was given out by the worm, interfering with the continuity of the true thread.

"However, I do not despair that hereafter, by some new method of treating the worm when arrived at maturity, I shall succeed in causing it to form its cocoon hermetically closed, like that of the ordinary silkworm; for although the closed cocoon has not yet been accomplished, I have reason to hope for success on future trials. One advantage certainly would be gained—in reeling the silk thread, the cocoon would be treated in the same way as that of the old species, which is now naturalised in Europe.

"I hope that my first success will be crowned by another,—viz., the improvement of the silk-thread. All my efforts tend to the accomplishment of this object, and I cannot doubt but that ultimately I shall obtain a cocoon with a continuous thread, and not subject to breaks, as at present. A new species of silkworm will have been introduced, which will breed five or six times in the course of the year, and is capable of deriving its nourishment from five kinds of vegetable substances—the castor-oil plant, the mulberry, the willow, the lettuce, and the wild chicory—and will add a new source of wealth to the vast and fertile possessions of Great Britain."

Mr. Foster then proceeded to state, that a short time back he had received a communication from the Secretary to the Malta Society of Arts, Manufactures, and Commerce, in which it was stated that, "With a view of encouraging and promoting the introduction of manufactories in these islands, and thereby augmenting the limited resources of this population—a people naturally of an industrious and laborious character, and susceptible of instruction in the Arts—the Committee of Management of this Society have offered to aid, as far as in their power, a Signor Lotteri (a gentleman lately arrived amongst us from the north of Italy), in developing a project for establishing in our island, by means of a Joint-Stock Company, a "Silk Mill," viz., a factory for spinning (winding off) Smyrna and other Levant cocoons—a scheme which would not only give employment to a large number of women, but likewise, according to Signor Lotteri's showing, offer an excellent inducement to capitalists, and open to the British silk merchants a new market for raw silks at prices infinitely more advantageous than those of Italy and France." Four hanks, viz., two of white and two of yellow silk, wound off Smyrna cocoons of inferior quality, were forwarded with this communication, for the purpose of being tested and reported upon. Messrs. Durant and Co. had, at the request of the Society, kindly undertaken this task, their opinion being as follows:— "We have examined the sample of silk reeled from Smyrna cocoons, and find it to be of very middling quality. The thread is well laid on the reel, but badly made,—being uneven, flat, and wanting in compactness; it is also endy, and has many weak threads, which cause

waste in the processes of winding and throwing,—these imperfections exist in a greater degree in the yellow than in the white sample. The value of the former is about 16s. 6d., and of the latter 17s. 6d. per lb. As regards the desirableness of establishing a factory in Malta for reeling Syrian and other Levant cocoons, we are not sufficiently informed as to the capabilities of that island for such an object, but it may assist the Society in determining this point, when they are informed that Syrian silk of good quality, reeled in the country, is much esteemed here for certain manufactures, and realises a comparatively high price, while silk reeled in France from Syrian cocoons—a practice now adopted to a considerable extent—commands a price nearly equal to some of the “raws” of the Ardèche and the Drôme. There are four things essential to the proper reeling of silk, namely, climate, good fresh water, skill, and cheap labour. Malta, we believe, affords ample facilities in the first two of these requirements; if it is equally well off as regards the last two, there can be little doubt but that silk reeling might be turned to good account.” Mr. Foster said that he had thought it right to lay this summary of information, recently received by the Society, before the meeting, as he felt that it was desirable, on all occasions, whenever any subject was under discussion, that it should, as far as possible, be exhausted. He was aware that the points he had noticed were but briefly alluded to in Mr. Dickinson’s paper, which he trusted would be as critically and minutely examined as the author wished.

The CHAIRMAN said his duty was now to invite observations on the paper, and he could not avoid that opportunity of saying how much importance he attached to the subject, and not only so, but to the able manner in which it had been laid before them. A more lucid and intelligent paper he had never heard read; and supposing that anything like the results contemplated were arrived at, he believed the revolution in the silk trade would be as great as those the inventions of Arkwright had effected in cotton spinning. The paper presented several subjects for discussion, and the first, which was a very inviting one, was as to the possibility of reeling silk in England. That was far from being a settled question, and it would be very desirable if they had still further information on that subject. The grand point—the leading feature of Mr. Dickinson’s plan—was the importation of cocoons; the whole rested upon that simple fact, and Mr. Dickinson had well said that it was not enough to say, because they had never done it they could not do it. They imported cotton and wool, and for his own part he saw no reason why the same should not be the case with cocoons. The great question was as to the cost, and whether the improvement in the reeling would compensate for the additional expense of importing the cocoons into this country. He might be allowed to state, that some years ago he had an opportunity of superintending some filatures in Italy for two seasons. It was in the best reeling district, but the carelessness of the peasantry there could not be exceeded in any country, and therefore everything was in favour of introducing the operation into this country; and they knew from experience that where the machinery was good, although the silk might be produced in inferior districts, and fed upon leaves in an unhealthy spot, still where it was well reeled, depending upon the evenness or the speed, the article would be preferred to that of higher districts where but little attention was paid to that operation. There was one other point upon which he would like to hear the opinions of those conversant with the subject. Mr. Dickinson had said that the brilliancy of the silk was not a matter of consequence. It had been the habit to attach some consideration to the brilliancy of the article, and he would like to hear whether there was anything inherent in the brilliancy of the silk which gave an advantage in the subsequent operations to which it was submitted.

Mr. P. L. SIMMONDS said that he was sure all present would heartily concur in the encomium of the chairman on

the valuable paper which had just been read, which, from the magnitude of the subject discussed, the clearness and popularity of its details, the important improvements noticed, and the vast amount of practical information furnished, was in its general interest second to none which had ever previously been delivered in that hall. Having been called upon by the chairman to make a few observations, he might, from having bestowed some careful study and investigation on the subject, supplement a few facts in corroboration of the observations made by Mr. Dickinson, especially as to the variety of worms furnishing silk, their food, and the wide area over which the production of cocoons for import might be extended. We might form some faint idea of the magnitude of the silk trade of this country alone—to say nothing of the manufacture of other countries—from the fact that the declared value of our exports of silk manufactures exceeded 1½ millions sterling; and we import about 5,000 tons of this costly material, of which 5 million pounds are raw silk, 2 million waste knots and husks, and ½ million pounds thrown silk—employing 1½ million spindles, and 6,000 power looms. Our chief imports were about 10,000 or 12,000 bales from India, and 36,000 bales annually from China. Last year the imports were 1,600,000 pounds (or 2½ per cent.) in excess of 1853. The demand for silk everywhere was on the increase. The continental countries now consume nearly all they produce. The United States take foreign silks to the amount of 5½ million sterling, and almost all classes of society are large consumers of silk in some shape or form. Unlike the time when stringent laws regulated the dress of various classes, when velvets and fine silks were restricted to peculiar ranks, every one may now indulge in those superior luxuries if they have the means. In nothing is the goodness and wisdom of Providence more manifest than in the numerous animal and vegetable substances furnished so liberally for the comfort and convenience of man, so that even the most minute portion of the insect tribe, which might seem insignificant in their products, furnish some of the most valuable articles of commerce, of which we have instances in silk, the cochineal dye, the wax and honey furnished by the bee, the lac resin and dye, and the gall nut. For clothing, man avails himself of the down or wool of the cotton plant, the pliable barks and fibres of various trees and plants, and the fleece of the sheep; but certainly the most elegant and generally esteemed is the rich product of the tiny silk worm. Mr. Dickinson had already alluded to the principal silk producing countries, but the following observations might be added:—Portugal could easily become one of the richest silk countries of the world, her soil and climate being most admirably adapted to its culture; and some attention was given to it at Oporto a few years ago, by Mr. Tinelli, the American consul, who carried out several improvements in the Piedmontese reel. The three Algerian provinces of France are taking a distinguished position among those countries which are indebted for their wealth to the cultivation of silk. The award of two medals at the Great Exhibition of 1851 had stimulated exertions, and in the single department of Algiers 14,000 kilogrammes of cocoons were produced by a few hundred individuals. In Egypt the cultivation of silk has received considerable attention, and plantations of the mulberry have been extended. In an extensive continent like that of Africa there must be various localities well adapted to the growth of the mulberry; and on the banks of the Nile, or in some of the rainless regions of that quarter, silk will yet, no doubt, be grown to a great extent. Passing from the silk of the domesticated moth to that of the wild species found in Africa, there is reason to think that many unknown species will be there found to produce silk nearly as valuable as that with which we are at present acquainted. Capt. Downes brought with him, from Fernando Po, a few years ago, a considerable number of large white cocoons of a Bombyx, which produces a strong and durable white silk. These

cocoons might, with very little trouble, be collected and imported into England, as they were found in considerable abundance. A few years ago there was exhibited, at the Entomological Society, a large quantity of rough silk, collected at the Cape Coast; apparently it belonged to a species of *Cossus*. It is exceedingly abundant there, and, although of a quality inferior to other silks, it might, with proper management, become a useful import, similar to the Kollisurra, Tussah, Arindi, and Bughy moths of Asia. Various others are found in Africa, yielding silk quite equal, if not in some respects superior, to them. And to the Bombyces of this continent may be added various species of *Cossus*, offering a great variety of raw material. It is singular that experiments have not been more directed to the African continent. Among the wild moths which spin their cocoons among the shrubby plants of India is a species nearly as large as the Atlas, whose food is the leaves of the *Protea Argentea*. This worm might be turned to some account, as it resembles the insect of India which spins the strong silk known by the name of Tussah. Allusion has been made to Natal silk. Experiments were for some time successfully carried on in the Cape Colony and Mauritius. The large island of Madagascar also affords silk, and a large quantity of cocoons might doubtless in time be obtained from thence. A butterfly, differing far from the *Bombyx Mori*, but which produces an excellent silk, is common in French Guiana. The caterpillar feeds on a species of mangrove, which, from its growth in the water, serves in a great measure to keep off the ants and other predacious insects. The silk is stronger than that in common use, of the colour of nankeen, but readily bleached, and receives the most delicate dyes. The manufactures from it resemble the better kind of Malaga serges, usually the strongest of silk textures. The cultivation is much encouraged by the French Government, who consider it as giving additional importance to the colony of Cayenne. The whole continent of Asia, from Scinde to China and the Eastern Archipelago, might produce silk. It has been occasionally tried and experimentalised on in various quarters—in the West India Islands, the United States, the Sandwich Islands, Australia, &c.; but the difficulty of reeling, the want of proper food for the worm, and the absence of a due knowledge of the habits of the insect, combined with a demand for more immediately remunerative staples, has caused it generally to be given up. Now, however, that the cocoons are marketable, more attention will, doubtless, again be given to it. Vast quantities could doubtless be obtained in the Neilgherry hills, in Assam, Bokhara, and Afghanistan. The dry and equable climate of Scinde is especially favourable to silk culture, and it is somewhat singular that though there are about 1,000 silk shops in Lahore, the capital of the Punjab, and 2,200 at Umritsir, little or no raw silk is produced there, the material for their extensive manufactures being drawn from contiguous states. The coarse silk called Tussur could be obtained in large quantities in the wild tract of country to the eastward of the Godavery River. The breeding worms in cocoons are preserved in the houses. At the proper season the young caterpillars are taken to the jungle, and placed on wild trees, where in time the cocoons are formed. Demand would encourage supply to an unlimited extent. If this coarse kind of silk would sell in Europe, and he had heard that a kind of cloth could be made of it, mixed with cotton, the whole jungle would unfold its treasures, and a very large quantity might be brought into the market annually. Six species of silk worm are found in the province of Assam. 1. The mulberry silk worm (*Bombyx Mori*.) 2. The Tussah silk worm (*Saturnia* [*Phalena*] *Paphia*.) 3. The Eria, or Arindi silk worm, to which allusion has been specially made this evening. (*Phalena* [*Bombyx*] *Cynthia*.) These species were previously known, but the following are described and named by Dr. Helfer. 4. Mooga silk worm (*Saturnia Assamensis*, Helfer.) 5. Joree silk worm (*Bombyx religiosa*, Helfer.) found

on the Peepul tree (*Ficus religiosa*), which is said to yield a silk equal to that produced by the mulberry silk worm. 6. *Saturnia silhitica*, Helfer. There are probably other wild species in different parts of India, which may be found to yield useful products. The wild worms feed upon different trees, such as the Jujube (*Ficus religiosa*), castor oil plant, some of the laurel tribe, and others which are found in almost all the forests of India. The large or annual cocoon of India is principally reared in the district of Cossimbuzar, but is also produced at Bauleah, Harripaul, Jungpore, Radnagore, Soonamooky, and other of the East India Company's filatures. It is one of the most valuable species of cocoon, and yields the best silk, which is of fine fibre, and strong, and ought to be very mellow to the feel, of clear yellow colour, with some white. In favourable seasons it yields a very abundant and profitable return, producing (if the cocoons are good) in the proportion of at least two to one of the other species. The small or indigenous cocoon (*Dessee worm*) is the native silkworm of Bengal, and is produced throughout the year—that is, there are four or five collections annually—but it varies in estimation and value according to the season of produce, and the more nutritious food afforded by the mulberry plant at one season of the year rather than another. Of this species there are no less than five harvests produced at Commercolly, viz., in October, November, March, April, and in June and July. There appears at Cossimbuzar and elsewhere to have been an intermixture of the *dessee* or native worm with the China insect. The Chinese cocoon since its introduction appears to have degenerated greatly in many parts of Bengal. It is of both the white and yellow sorts, and yields silk generally of very fair quality. It is produced in almost every month of the year except March. The quality of the silk it produces is said to be in every respect inferior. The Nistry tribe of cocoons appear to be composed of three species, the Madrassie, Soonamooky, and Cramee, which are peculiar to the Commercolly district, except the Madrassie worm, which is more generally distributed. Of those varieties the Soonamooky is considered the best. The Madrassie ranks next; it is distinguished from the *Dessee* by a black mark under the throat. It is preferable in produce, &c., during the hot weather and the rains, from May to October. Its great comparative defect is, that it cannot be kept in store longer than a few days without total destruction, whereas the *dessee* may be kept in well-aired cocoeneries even twelve months without material injury. This worm, like the Soonamooky, is very hardy, requiring little care, and is not at all choice in its food. The wild or Tussah silkworms are reared in all the western forests from Rhangur to Midnapore, with some degree of variety as to the quality of the *gootte* (as the cocoon is locally called). There are three different kinds of wild silkworms collected in August and September, viz., the mooga, teerah, and bonbunda, with some varieties known as dabba, buggoy, and tarroy by the native collectors. The bonbunda is the largest of the wild silkworms, and of a greater size than any cultivated species. It is sometimes found in considerable quantities in the woods. If other and useful varieties of worm, producing good silk, can be fed upon different substances than the mulberry, a great point will be gained. Signor Griseri has placed the common Indian worm, the *Bombyx Cynthia*, on the castor oil plants in Piedmont, and has also succeeded in feeding them exclusively upon willow and lettuce leaves, and is trying to rear the native grubs, *Pavonia major* and *minor*, which feed upon various wild plants. Thus the Tussah worm feeds on a species of *Terminalia* in India, and the Mooga, or *Bombyx saturnia*, as we have seen, on the *Zizyphus jujuba*. A M. Bonafons proved the efficacy of the Chinese method of feeding silk worms on rice flour, and he also discovered that the caterpillar would eat various kinds of farina, and even the fecula of potatoes. Although there may be moths which will thrive on different plants, still the mulberry appears to be

the only food available generally for promoting silk culture on an extended scale. The Rev. Mr. Savage, who tried the lettuce, found the worms grew more rapidly, but were weaker and yielded a diminished quantity of an inferior silk. Miss Rhodes, Mrs. Williams, and other experimentalists, have tried other substitutes, with only very partial success, and the results have shown that the mulberry is the natural food; from it the best silk is eliminated, and as it is not more difficult to rear than any of the proposed substitutes, it follows that to neglect planting it for the sake of hardly probable success with other things, were but a waste of time. It is a singular fact that no other caterpillar will, however, live upon the mulberry, and that even the aphides, forming so tiresome and fatal a blight to other plants, never invades this. He had thrown out these hints and suggestions in the hope that they might lead to further inquiry and investigation into this important subject, connected with our second great textile manufacture, an interest in which, as had been stated, a capital of some fifty millions was invested, and which was fraught with important interest to the manufacturing districts and large classes of our labouring and industrial population.

Mr. J. G. FATH presented to the Society, for the Trade Museum (Animal Collection), a skein of silk, the produce of a few worms reared in the island of Ceylon—a place which, he believed, had not been mentioned by Mr. Simmonds. This had been sent to him by a friend, to be valued and reported upon, with the view of ascertaining whether the culture of the silkworm in that island was likely to be attended with success. The reeling had been defective, owing to the rude tools possessed by the inhabitants. The mulberry tree grew there most readily, and an abundant supply of food might therefore always be relied upon; but the point to be decided by experiment was, whether the climate of that island was not too damp for the favourable rearing of the worm. This his friend had determined to test very carefully—the eggs he possessed for the purpose being the Maltese and Madras varieties. Messrs. Durant and Co., the eminent silk brokers, had kindly favoured him with their opinion on the skein of silk alluded to. They stated that, “as regarded quality it possessed all the requisites of a superior kind. The cocoons were round, and of good fibre, free from wooliness, and consequently capable of producing a clean thread; and, if such were properly reeled, the thread would have sufficient strength and elasticity. The colour and general appearance of the sample indicated all this, and it had, besides, the advantage of being light in weight proportioned to its bulk—in this respect resembling the silk of Italy more than that of Bengal or China. Provided the worms were reared, and the cocoons produced under ordinary circumstances, there could be no doubt but that the local peculiarities were favourable for the culture. With reference to the reeling, it was evident that the cocoons had simply been run off on to a reel, without any attention being paid to the details or mechanism of the process. The chief defects were the want of ‘torsion’ on the thread (to cause cohesion of the fibres, compactness, and roundness), and of a ‘guider’ to regulate the motion of the ‘layer.’ It had been suggested by a practical Italian reeler, who had seen the samples, that it would be well to regard the cocoons as a primary article, and as such send them to Europe (France or Italy), where they could be reeled, thereby avoiding the embarrassment, trouble, and expense consequent upon all attempts to introduce the art of silk-reeling; as it would only be after long experience and perseverance that there would be the remotest prospect of success in Ceylon, so as to be able to compete with countries where the art might be said to be traditional.”

Mr. WINKWORTH said, that having been engaged in the manufacture of silk goods in Spitalfields during all his early life, and indeed until more mature age, it might be expected of him to say a few words on this occasion. He therefore, had risen, not so much to controvert the

principles and propositions involved in the very able and interesting paper of his friend Mr. Dickens, as to bear his cheerful testimony to its substantial merits. A manufacture which absorbed a capital of fifty millions in machinery, and an annual expenditure of six millions in the raw material and labour, and which gave employment, at the lowest estimate, to a million of persons, was one of great national importance. Any plan or discovery, therefore, which had for its object the economical breeding of the worm and the improvement of the silk it produced, was a desideratum, the full value of which it would be difficult to estimate, for in proportion to that extra production must be the extra number of persons employed. Assuming, then, the correctness of all the facts upon which Mr. Dickens had based his calculations, the system or plan to which he had that evening given publicity, must be hailed as worthy of all encouragement. With his (Mr. Winkworth's) known opinions on the subject of what was erroneously called “Patent Right,” he could not but feel regret that his friend had deemed it for his interest to have recourse to that questionable species of protection. With his knowledge, however, of that gentleman's liberality and patriotism, he could scarcely doubt that he would readily disengage himself from that incubus upon improvement, and give to the silk trade at large the benefit of his investigations and improvements. He did not know how far in these remarks he had been anticipated, if at all, by the previous speaker, Mr. Simmonds, as he heard him very imperfectly, and which he regretted the more, as he never rose in that room or favoured the Society with a paper but to communicate valuable and original information. There were, however, one or two matters of opinion contained in the paper of Mr. Dickens to which he must venture to take exception. The first of these related to the present condition of the goods produced by the silk manufacturers, which he described as “deteriorated in intrinsic value,” and, except as to “artistic beauty,” absolutely “stagnant.” Now he, Mr. Winkworth, could not subscribe to this doctrine, and he would, therefore, trouble the meeting with a short historic narrative, that would serve to illustrate his views on that point. It would be in the recollection of the Society, and probably of some members now present, that in the month of June, 1849, when their illustrious President occupied the chair now so worthily filled by his friend Mr. Gibson, for the purpose of distributing the prizes awarded by the Council, he (Mr. Winkworth) was called upon to say something respecting the silk department of the Exhibition of British Manufactures which had recently been held at the Society's Rooms; on which occasion, after paying a tribute due to their excellence as a whole, he ventured to add, “that if it were possible to have an Exhibition at which the manufactures of other countries could be placed in juxtaposition with our own, the silk trade need not fear the result of the ordeal.” That which was only a possibility in 1849 became a certainty in 1851; and he had the opportunity, as one of the jury of the silk department (Class 13) on that memorable occasion, to collect the opinions of his co-jurors on the relative merits of the goods made in England, and those which were the products of foreign countries, and to embody them in a report, an extract from which he would now read to the Society:—“A very slight glance at the goods exhibited by the English manufacturers will enable those who have attended to the state of the silk trade of this country, to observe the great progress which has been made in quality, design, and cheapness during the last twenty years. Until within that period this branch of manufacture was comparatively inconsiderable, but it is now one of great importance, both as regards the quantity and value of the goods produced, and the extent of the markets opened for their sale and consumption. It is remarkable that though the raw material is, like cotton, an exotic, the judicious application of skill and capital has overcome that natural impediment; and articles of

extensive consumption, for the supply of which England was a few years since almost entirely dependent on foreign producers, are now nearly exclusively manufactured in Spitalfields, Lancashire, and other favourable districts. Of this fact the Exhibition furnishes many examples. The jury do not allude to this as depreciatory of similar goods of foreign production, which are equally well made, but as illustrative of the beneficial effect of the policy by which the incubus of heavy duties on the raw and thrown material was removed, and that which operated as a practical prohibition on the foreign manufactured article was reduced to an almost nominal impost. Goods are now made, both for the home and foreign markets, which were heretofore exclusively supplied by continental manufacturers." Now, when we bore in mind that this jury was composed of some of the best judges of silks, M. Arlés Dufour, for instance, of Lyons, and now the secretary of the "Exposition Universelle" of 1855, and of other gentlemen from Switzerland and Italy, besides English manufacturers, this dictum might be taken as conclusive evidence up to that time. He must also question the accuracy of the broad assertion that the quality of British silk goods had suffered by extreme competition, while the woollen manufactures of Leeds, Bradford, and Glasgow, had improved. This opinion he would fortify by another short extract from the Report, for the language only of which was he responsible, the conclusions being those of the jury:—"It may be doubtful whether excess of competition is not rather calculated to lower the standard of perfection than otherwise; but where, as in the silk manufacture, the market is the world, and the consumption unlimited, the scope for the exercise of taste and skill in all producing countries, is proportionately extensive and profitable." He would not further encroach on the time of the meeting, but would conclude by again expressing his opinion that the Society ought to feel much obliged to Mr. Dickens for his important contribution to the scanty information hitherto possessed respecting "the commercial consideration of the silk worm and its products." Mr. Winkworth, in conclusion, stated that his friend, Mons. Delarbre, of Lyons, then sitting at his left hand, and who had come over to this country for the purpose of introducing the process of "conditioning" silk, as practised in Italy, France, and elsewhere on the Continent, had requested him to inform the meeting, that he, Mons. Delarbre, could fully confirm, from his own experience in France and England, the opinions expressed by Mr. Dickens, as to the possibility of successfully and profitably introducing the process of reeling from the cocoon in this country.

Mr. PEARSALL said it would be interesting to learn what were the received opinions of the trade relative to the properties of the gum of silk—whether it contained any peculiar properties, or, when dissolved in water, whether it had any poisonous or prejudicial effects upon the constitution. He recollected having heard Mr. Felkin, of Nottingham, state, that appropriate means were taken to try the experiment of reeling in England on a large scale, when it was found that the young persons employed became subject to such an amount of illness that the capitalists felt it to be humane to abandon the experiment. In France and Italy the reelers, working with plenty of pure dry air, seemed to be affected by no particular disorder—while the exposure of the young in this country to constant damp induced painful suffering.

The CHAIRMAN said, as he believed he was the only actual reeler present, he could give the best answer to the inquiry which had just been made. He had the management of two filatures in the North of Italy, and he could state, from his own observation, that there was no appearance of unhealthiness in the establishment. The silk was not reeled out of doors, but there was a plentiful supply of air. He did not think climate was a sufficient reason to account for it.

Mr. FEUILLADE, on the part of M. Delarbre, remarked that, during the prevalence of cholera, the silk reelers in Italy were singularly exempt from that disease.

Mr. R. R. R. MOORE wished to ask Mr. Pearsall whether Mr. Felkin, and those who made the experiment with him, came to the conclusion that the disease was the result of the reeling; whether they took pains to have the gum chemically examined; and whether it was found to contain any properties deleterious to health?—because the mode of ascertaining the fact was in itself so simple that one might expect such a course would be taken before an opinion was expressed of the nature stated by Mr. Pearsall. A different cause for the sickness might, perhaps, have been discovered.

Mr. VAVASOUR bore testimony to the value of Mr. Dickens's process, which he believed would cause a great revolution in the silk trade of this country, and he could encourage his friend as to one of the difficulties he apprehended, that was as to the supply of cocoons. He thought there would be no difficulty as to that. A gentleman of his acquaintance, who traded largely with China, was at present in communication with his representatives abroad, on the subject of the importation of cocoons, and no doubt was entertained that they could be procured in sufficient quantities.

Mr. GRAHAM said, having formerly been engaged in the silk trade, he had made a point of attending the meeting. The subject resolved itself into one point, viz., could they import cocoons in a sufficiently healthy state and with such economy, as with the clever appliances of his friend Mr. Dickens, to produce a more even or level thread. They all knew the quality of China silk to be good, and if they could produce a good even thread from it, there was no doubt it would obtain the preference, and then the difference of cost would vanish in a great degree. He thought there could be no doubt of having a sufficient supply of cocoons. The next point was, whether his friend's plan would produce a better thread. They were aware of the negligent way in which the silk was reeled abroad, and he hoped to see it remedied by the indefatigable exertions of Mr. Dickens.

The CHAIRMAN said there was one point which had not been alluded to by Mr. Dickens—that was—the effect which such a change as this would have upon the condition of the operative. All who had been engaged in silk-weaving knew that a great deal of the unhappiness of the weaver was caused by the bad nature of the material he had to work upon; and those were called good masters who used good silk, and bad masters who used bad silk; and they knew that numbers of people tried to make the best of a bad article, but very much fell upon the poor weaver. If by Mr. Dickens's plan a clean, good, and strong thread could be produced, he would be one of the greatest benefactors to the working classes in the silk business that ever existed. The Secretary had read a summary of information received from his Excellency Sir William Reid, and he (the chairman) must say how much this country was indebted to that gentleman. He knew the pains which his Excellency took three or four years ago at the Great Exhibition, as chairman of the Executive Committee. Since that he had been employed as Governor of Malta, which they could conceive was a most difficult and responsible position at the present moment, and yet they found him giving leisure to the cultivation of a material of this kind, which was calculated to confer very large benefits upon the inhabitants of the island over which he presided. He had received several letters from Sir William, from which it appeared that he had a great idea of introducing extensively the Assam worm into Malta. The castor-oil plant would grow well in Malta, but the mulberry tree, it seemed, could not be produced there in sufficient quantity to encourage the introduction of the common silkworm. It was no less a duty to perform the very pleasing task of proposing a vote of thanks to his friend, Mr. Dickens, for his very able paper. He had stated, in the early portion of his paper, that he made no pretension to excellency of composition, but he thought they had all found out that when a man knew what he meant to say, and said nothing



more, he arrived at the best style of composition, because it was the most simple. Independently of the style, they had had most important matter, and he was sure the meeting would go with him in saying that it was a paper which did the author great credit, and that, by the way in which he had treated the subject, he had conferred immense services upon the important trade in which he was engaged. He ventured to say they all felt very much obliged to him for the paper he had read that evening.

Mr. DICKINS having thanked the meeting for the kind manner in which he had been received, said he would refer to one or two points mentioned in the course of the discussion. The chairman had referred to the freight of the cocoon. That was a most important consideration, certainly. Within the last fortnight he had received bales of cocoons from Syria and China, press-packed, —perhaps the first time they were imported in that way; they were equally perfect, and reeled equally well with those imported in their natural form. Provided the cocoons were thoroughly desiccated previous to packing, no harm could happen to them. The cost of freight would not be much in a pound of silk; even at £30 a ton, it would only be 3d. per lb., which could very well be afforded if they had the advantage in the quality of the article. With reference to the lustre of the raw silk, the remarks of the chairman were correct as to the silk at present reeled on the Continent, because it was supposed that all such was reeled on one uniform plan, and hence any difference in the appearance would denote some imperfection in the reeling, but in his own works he had tried the silk treated both ways, *i.e.*, with and without soap, and he had found no difference in the lustre when boiled off and the gum extracted. He was much delighted by the remarks of Mr. Simmonds upon the new worms he had mentioned, and he agreed with him that the mulberry leaf was the natural food of the silkworm, and it was proved that it only required to be cultivated to obtain as much of it as they required. A gentleman made some remarks about reeling in Nottingham, and that the result was injurious to the health of the children. He could not understand why it should be so, unless the reeling was performed with very hot water, so that the children were exposed to the steam; but in his process tepid water only was required in the reeling, so that in this process the children were not exposed to any injurious results whatever. Mr. Graham had put the question, whether we could produce a more perfect thread. He desired to press upon the attention of the meeting that the worm was a perfect spinner, and from one end of the thread to the other there would not be found a practical imperfection—consequently it was only an improved method of reeling that could improve the quality of the thread. The experience of the mechanical world, and all manufactures to which machinery was applied, would justify him in saying that the steady motion which attended this method of reeling must produce a superior thread. He would give an evidence of this in the bobbin of China silk which he held in his hand, the thread of which did not exceed eight deniers.

The Secretary announced that the papers to be read on Wednesday evening next, the 14th inst., were: 1. "On the Expediency of at once Decimallising English Moneys and Weights," by Mr. J. A. Franklin. 2. "On the Basis of a Decimal System of Money for the United Kingdom," by Mr. F. J. Minasi; and 3. "On Decimal Coinage," by Mr. Hugo Reid.

#### EXAMINATION OF STUDENTS IN CLASSES IN INSTITUTES.

The Institutions are reminded that the time for the proposed examination is drawing near. The Council is making preparations for conducting these examinations

during next month (March), as stated in the original memorandum. In the meantime, such Institutions as contemplate having candidates for examination, are requested to communicate as early as possible with the Secretary of the Society, stating the probable number of the candidates, and the subjects in which they desire to be examined.

### Home Correspondence.

#### THE F.S.A. QUESTION.

SIR,—This subject has now had some discussion in the Society's Journal, and, from the contents of the various letters on the subject, it appears to be the general, and I might say *unanimous* opinion, that there should be some settled rule for the government of the members and the guidance of the public.

You say that, neither by charter, bye-laws, nor custom, is there any authority for members to use *any* letters denoting membership. All I can say is, that during the time of the Great Exhibition, I noticed that *several* members used the letters "M.S.A." and that on Sir Joseph Paxton being gazetted knight, the notice had, after the name of the worthy knight, "*Fellow* of the Society of Arts," and of another society also, I think; that many members have at various other times been in the habit of using some letters denoting fellowship or membership; that various works on such subjects have given initials and stated them to be those distinguishing members of this society, and in consequence, doubtless, many have erroneously used and permitted the use of such.

I quite agree with the remarks of "M.S.A." and "C.B." that the question is a fit one for the Council to deliberate upon, in its present unsettled state causing much confusion and many mistakes, and might lead the public to suppose that we love to "strut in the borrowed plumes" of members of other societies; and as there appears to be a general desire that there should be *some affix*, it will be for them to consider, and, after due deliberation, to bring the question before the members according to the bye-laws, by which they have the power, either at an ordinary general meeting of the Society, or a special general meeting for the purpose, or they may convene a general meeting for this special purpose, upon a requisition to that effect, signed by not less than ten members of the Society. (See bye-laws, 1854—Nos. 79, 80, 81, 82, 91, and 92.)

I am, sir,

Yours faithfully,  
W. H.

Blackburn, Jan. 29, 1855.

SIR,—After the virtual settlement of the F.S.A. question by the authorised statement of our Secretary, that "neither by the Charter, by the Bye-Laws, nor by custom, for upwards of one hundred years, is there any authority for members of the Society of Arts to place any letters after their names denoting membership" it may be considered somewhat superfluous that I should again trouble you on the subject. A Gosport correspondent has, however, in your last number, quoted Maunder's "*Treasury of Knowledge*" as an authority for the use of the initials F.S.A. by the Members of the Society of Arts, and I would just wish to make a remark upon it. The explanation of Maunder is ingenious, but palpably erroneous, for, setting aside the point of *Fellowship* as opposed to *Membership*, to which I before adverted, Mr. Maunder makes, by his own showing, the Fellows of the Society of Antiquaries, as well as the Members of the Society of Arts, entitled to the initials F.A.S., and neither of them to the already disputed ones F.S.A.

I believe Dr. Hume, in his account of the learned societies, to be more correct in his statement, when he says (page 10), "the Fellows of the Society of Antiquaries sign indiscriminately F.S.A. and F.A.S.; but the latter is



incorrect, or less correct." Why the Fellows of the Society of Antiquaries make use of the initials indiscriminately, has probably arisen from this circumstance: In the early days of the Society, when its Fellows or Members met at the Young Devil Tavern, and Peter Le Neve, the ancestor of our Secretary, was one of them—it was designated as the "Antiquarian Society." The initials F.A.S. were consequently the most appropriate initials of Fellowship at that time, and, as title-pages of works by Fellows of the period inform us, were universally adopted. In 1751, however, George II. granted them a Charter, with, for the first time, the style of the "Society of Antiquaries of London," which it has subsequently retained. After that period F.S.A., as the more correct initials, were gradually adopted by Fellows—although the affection of some for the old style is still apparent. *Grose*, in his *Antiquities*, I perceive, is styled *F.A.S.*, (edition 1790.) Strictly speaking, as this was after the Charter of George II., it should have been *F.S.A.* I will now conclude by signing myself, as before, for the sake of identity merely, and with no desire to infringe the custom of one hundred years,

Your very obedient servant,  
F.S.A. et M.S.A.

London, January 30.

### Proceedings of Institutions.

**LEEDS.**—The annual meeting of the members and subscribers of the Mechanics' Institution and Literary Society, was held on Wednesday the 31st ult. The chair was taken by the President, W. St. James Wheelhouse, Esq., and the attendance was fully an average, including many of the influential members of the Institution. Previous to the reading of the report, some discussion arose as to the relative number of members and subscribers eligible to election on the committee, when it was decided that there should be twelve of each class. The President then proceeded to read the report, from which the following summary is drawn. The tabular statement of the number of members and others connected with the Institution during the years 1853 and 1854, shows an increase of 39 in the one just closed, making the total number of supporters of all classes 2,219. The greatest increase had taken place in the elementary improvement class. The lecture course for the year has been more than usually copious in extent, and agreeably varied in character, embracing a wide range of interesting topics in history, philosophy, science and art, general literature (including the drama), and also in music. The classified catalogue has now been in the hands of the members and subscribers for some time. Its preparation for and superintendence in passing through the press is entirely due to our late assistant secretary, Mr. Traice. In the appointment of Mr. Traice's successor, Mr. Mc Ivor, the directors feel that they have an efficient teacher in that extremely useful branch of education—natural philosophy. The Committee has deemed it necessary to introduce several changes into the library arrangements, affecting the freedom of personal access to the book shelves on the part of the members and subscribers. These changes have been long in contemplation; and the necessity for introducing them became more apparent at each successive scrutiny the library underwent. Many books were damaged or soiled, not merely by rough handling, but some were found to have been purposely spoilt by being scribbled in, or otherwise marked; whole leaves and many valuable plates were torn out, or had been defaced; no less than three hundred volumes, forming entire works, were unaccountably missing; nearly one hundred books, consisting each of several volumes, were abstracted, thereby rendering the whole series comparatively, if not absolutely useless; and about one hundred and seventy volumes had to be withdrawn from circulation, many of which were permanently worn or damaged, and these losses were in-

curred during a period of only seven or eight years. To prevent as much as possible any inconvenience arising from the alteration, it was arranged that the new practice should come into force simultaneously with the issue of the classified catalogue, by a reference to which any required work, if upon the shelves at all, may be found immediately. The Committee has also thought it right to make some further restriction of the privileges granted to the pupils of the day schools. The additions to the library during the year have been as follows:—465 vols. by purchase, 60 vols. by binding periodicals, nine vols. by donation, and six papers by donation. There have been 35,936 issues of bound books, and 7,110 of unbound periodicals, being about 10,500 less than in the previous year—a diminution due doubtless to the great interest felt in those momentous events upon which the eyes of Europe are at present fixed. The recent introduction of the telegraphic despatches into the Institution has given a new and interesting feature to the reading room, and the Committee has the satisfaction of believing that this arrangement has met with the decided and almost unanimous approbation of the members and subscribers. Important changes in the boys' school connected with the Institution have now been in operation for a period of twelve months. The object sought in the remodelling of the school was to render the course of instruction varied and useful. Under Mr. Mc Ivor, the pupils have commenced a course of study, in which every step has been clearly demonstrated by actual experiment. These changes and additions have not been introduced without materially increasing the expenses of the schools, and as they were, in the judgment of your Committee, imperatively called for, they have involved an increase in the fees. From this cause the attendance has fallen from 219 to 170, but gratifying evidence has been afforded that the new system is working well. During the past year the committee has added an important department to the Institution, by opening a school for the education of girls. The progress of the School of Art has been for some time unsatisfactory, but the committee can now speak of its position and prospects with confidence and satisfaction. One of the pupils was fortunate enough to receive a prize medal at the late exhibition at Marlborough-house. The elementary drawing classes are also most numerous attended, and most successful. The aggregate income amounted to £2,277 3s. 8d. Mr. C. GOODALL proposed, and Mr. R. FROST seconded, the adoption of the report, when Mr. KERSHAW proposed, and Mr. GORE seconded an amendment that it be not adopted, Mr. Gore remarking that there was almost an entire absence of sterling scientific lectures, and that the restriction in regard to access to the library had had a most discouraging effect. Mr. HOLE, the secretary of the Yorkshire Union, defended the conduct of the committee in placing some restriction on the free admission of the members to the bookshelves of the Institution. He had himself a book at home from which a dozen fine engravings had been torn out by some person. He also commended the finance and building management, the committee having done all they could to render the place comfortable, and even elegant; but he regretted that he could not extend the same praise to their management of the classes, which seemed to receive too small a portion of the funds and of the attention of the committee. Leeds boasted that it contained the largest Institute in the kingdom, having now about 2,200 members; but, in practical utility, it fell far below Institutions making much less pretensions. He was frequently written to for information as to the best method of conducting an Institute, but he and his fellow secretary, Mr. Dixon, never referred to Leeds as a model, but to Huddersfield. Now it should be remembered that Huddersfield was a small town, containing 30,000 people, while Leeds contained 172,000, or nearly six times as many; yet the Huddersfield Institute boasted of having 576 young men receiving practical instruction in its classes, and Leeds had about 200 out of its 2,200. Huddersfield had 45 teachers, and Leeds 9, and while there was an actual at-

tendance at classes in the Huddersfield Institute of about 1,200 per week, Leeds had not 350. As a proof of the value of the Huddersfield Institute the inhabitants subscribed £150 per year towards it. They felt that it was raising the young men, that it was educating them, and that, therefore, it was a public benefit. Would the inhabitants of Leeds give £150 per year to their Institution? What for? That they might have newspapers, the electric telegraph, and novels? He did not object to these things in their right place and due proportion, but surely the classes—the educative part—were entitled to the first place in the attention of the committee. He was happy to state that the Society of Arts were prepared to offer examinations and certificates of merit to pupils receiving proper instruction in the classes of Mechanics' Institutions. What was Leeds doing to respond to this excellent proposal? Nothing. He contended that it was the first duty of the committee to render their Institution practical and useful in the class department, and the young men who would proceed from such an Institution would exercise an important influence on the many thousands in their suburbs, now destitute of any intellectual or educational machinery. After pointing out that they had several large rooms, scarcely, if at all, occupied in the evening, that they had a man—Mr. McIvor—who, if not overloaded with clerking duties, could well undertake the superintendence of the evening classes, he concluded by moving the following resolution:—"That the members and subscribers request the earnest and energetic action of the new committee in the extension of the evening classes, and in increasing their efficiency, regarding this as a most important branch of the Institution, and also as most in harmony with the objects for which these Institutions were formed." Mr. T. CLAPHAM seconded the proposition. After some further conversation, it was proposed by Mr. HAWKSWORTH, that the report be approved, excepting that part relating to the library. This was seconded by Mr. N. TILNEY, and supported by Mr. SIMPSON. Ultimately the report was unanimously approved, Mr. Hole's resolution being made a substantive motion, with the addition at the commencement of the following words:—"That this meeting, while it acknowledges the services rendered by the classes committee during the past year, would recommend, &c." The following was the result of the election:—*President*—The Rev. G. W. Conder; *Vice-President*—W. St. J. Wheelhouse, Esq.; *Treasurer*—Henry Oxley, Esq.; *Hon. Sec.*—Mr. John Taylor; *Committee*—Mr. John Bingley, Mr. R. M. Carter, Mr. H. Chorley, Mr. F. Danby, Mr. Thomas Dawson, Mr. E. C. Dray, Mr. W. Hewgill, Mr. Henry Wardman, Mr. T. Wilson; *Auditors*—Mr. Saml. Rayner and Mr. Jos. Redfearn.

#### MEETINGS FOR THE ENSUING WEEK.

- Mon.** Geographical, 8½. 1. Mr. C. B. Markham, R.N., "On the Sources of the Purus, a great tributary of the Amazon." 2. "Report on the Arrival of the Chadda Expedition under Dr. Baikie, at Fernando." 3. Dr. Vogel, "Accounts from the Central African Mission."
- Tues.** Royal Inst., 3. Professor Tyndall, "On Electricity." Syro-Egyptian, 7½. Mr. Ainsworth, "On the Yezidis or Devil Worshipers." Civil Engineers, 8. Discussion upon Mr. Leslie's paper "On the Flow of Water through Pipes and Orifices." Med. and Chirurg., 8½. Zoological, 9.
- Wed.** Literary Fund, 3. Royal Soc. Literature, 4½. London Inst., 7. Society of Arts, 8. 1. Mr. J. A. Franklin, "On the Expediency of at once Decimatising English Moneys and Weights." 2. Mr. F. G. Minasi "On the Basis of a Decimal System of Money for the United Kingdom." 3. Mr. Hugo Reid, "On Decimal Coinage." Graphic, 8. Ethnological, 8½.
- Thurs.** Royal Inst., 3. Mr. Donne, "On English Literature." Antiquaries, 8. Royal, 8½.
- Fri.** Royal Inst., 8½. Mr. Edward Jekyll, "On Siege Operations."
- Sat.** Asiatic, 2. Medical, 8.

## To Correspondents.

Letters from Mr. F. Braithwaite and Mr. John Evans, in reference to the discussion on Mr. Homersham's paper on "The Chalk Strata," and from Mr. Roberts and Mr. Wilkins as to "The Application of Liquid Manure to the Roots of Plants," as well as several others, stand over for want of space.

## PARLIAMENTARY REPORTS.

### SESSIONAL PRINTED PAPERS,

*Delivered on 31st January, and 1st February, 1855.*

Par. No.

21. Tower of London, &c.—Return.
29. Government Prisons, (Ireland)—Return.
30. Poor in Knogdart—Return.
33. Clergy Reserves, &c., (Canada), Despatch.
20. Criminal Prosecutions, (Scotland)—Return.
32. Public Revenue and Consolidated Fund Charges Act, Rules, &c.
35. Navy, (Excess of Expenditure for 1853-4, and 1854-55), Statement.
37. Ordnance—Supplementary Estimate for 1854-55.
16. Bills—Fisheries, (North America).
17. Bills—Passengers Act Amendment.
- Civil Service—Papers relating to the Re-organisation of War with Russia; Despatches from Governors of British Colonies.

*Delivered on 2nd February, 1855.*

38. Coffee—Return.
15. Bill—Public Health.
- Statistical Tables relating to Foreign Countries—Part I.
- Delivered on 3rd and 5th February, 1855*
34. Assistant Surgeons, (East India), Civil Service, (East India)—Report.
39. National Debt—Account.
14. Bills—Friendly Society.
- North American Colonies—Copies of Acts.
- International Copyright (Belgium)—Convention.
- Delivered on 6th February, 1855.*
18. Bill—Bills of Exchange and Promissory Notes.
- Steam-ship "Erin's Queen"—Report.
- Ship "Golden Era"—Papers.
- Session 1854.*
495. Railways (Persons Employed)—Return.
- Delivered on 7th February, 1855.*
41. Metropolitan Statistics (Scotland)—Report.
- Metropolitan Improvements—Statement.

## PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, Feb. 2nd, 1855.]

- Dated 10th November, 1854.*
2389. E. W. K. Turner, 31, Praed-street, Paddington—Separating fluids from substances.
- Dated 20th November, 1854.*
2451. H. Diaper, St. Michael's-terrace, Pimlico—New material for paper.
- Dated 25th November, 1854.*
2495. J. S. Holland, Woolwich—Fire-arms.
- Dated 29th November, 1854.*
2513. J. M. Hyde, Bristol—Iron steam ships, their boilers and machinery.
- Dated 30th November, 1854.*
2519. J. Mason and L. Kaberry, Rochdale—Spinning machinery.
- Dated 21st December, 1854.*
2695. A. Smith, Princes-street, and J. T. Mackenzie, Lombard-street—Application of high pressure steam to ordnance and small-arms.
- Dated 23rd December, 1854.*
2717. T. Heppleston, Manchester—Finishing machinery for silk, &c.
- Dated 26th December, 1854.*
2723. P. P. Blyth, 23, Upper Wimpole-street—Screw propellers.
- Dated 12th January, 1855.*
80. J. Onions, 44, Wellington-place, Blackfriars—Tobacco pipes, &c.
- Dated 14th January, 1855.*
129. C. J. Duméry, Paris—Smoke-preventing apparatus.
130. J. B. Surgey, Liddington-place, St. Pancras—Carriages.
131. T. Blackwood and A. Gordon, Paisley—Motive-power engines.
132. W. Lancaster, Preston—"Temples."
133. E. Leigh, Collyhurst—Preparing fibrous substances for spinning.
134. H. Partridge and J. B. Broome, Birmingham—Wrought-iron ordnance.
135. W. Johnson, 47, Lincoln's-inn-fields—Application, treatment, cleansing and dyeing of fibrous substances. (A communication.)
136. W. Pidding, Putney—Hair combs.
137. W. Pidding, Putney—Building materials.
138. W. Pidding, Putney—Coverings for the feet of bipeds and quadrupeds.
139. J. G. Lawrie, Glasgow—Sights of fire-arms and cannon.
140. M. J. Nyclassy, 13, Chandos-street—Wind musical instruments.
141. S. A. Bell and J. Black, Bow-lane, Cheapside—Lucifer matches.

*Dated 19th January, 1855.*

142. C. F. Stansbury, 17, Cornhill—Self-acting railway breaks. (A communication.)  
 143. S. J. Paris, Manchester—Embossing.  
 144. R. Martin, High-street, Marylebone, and J. Hyams, Union-street, Bishopsgate—Goloshes.  
 145. S. Isaacs, 22, Newman-street—Artificial coral.  
 146. J. I. Clarke, Windsor-court, Monkwell-street—Applying colour to edges of leather gloves. (A communication.)  
 147. J. Abbott and H. Holland, Birmingham—Preventing sinking of vessels, and raising when sunken.  
 149. T. C. Hill, Stanton, Lacy—Drain pipes and tiles.  
 150. P. C. P. Laurent, Prefontaine, Paris—Hydraulic sling for raising weights.  
 151. W. Smith and T. Phillips, Snow-hill—Taps and floats.  
 153. M. B. Rennie, 21, Whitehall-place—Preserving food. (A communication.)

*Dated 20th January, 1855.*

155. W. Douglas and J. Carswell, Manchester—Dyeing woven fabrics.  
 156. S. Salaville, Paris—Preserving and purifying grain and seed.  
 157. W. G. Pearce, Grosvenor-street, Camberwell—Projecting shot, &c., and exploding by electricity.  
 158. A. E. L. Bellford, 32, Essex-street, Strand—Paddle wheels. (A communication.)  
 159. F. Marguerite, Paris—Soda and potash.  
 160. W. Eisenmann, Berlin—Hearth.

*Dated 22nd January, 1855.*

162. J. Gedge, 4, Wellington-street South, Strand—Laminating metals either in relief or bas relief. (A communication.)  
 164. H. Carr, Peterborough—Railway crossings.  
 165. J. H. Pape, Paris—Pianofortes.  
 167. J. J. Van Camp, Paris—Pistons.  
 168. F. A. Vadinier, Paris—Fire-places.  
 169. P. H. G. B. Touzelin, Paris—Artificial flowers.  
 170. W. Kilgour, Liverpool—Naphtha, paraffine and paraffine oil.  
 171. P. Arkell, Stockwell—Purifying whale and seal oils.  
*Dated 23rd January, 1855.*  
 173. F. Prince, 3, South-parade, Chelsea—Cartridges for fire-arms.  
 175. W. Sellwood, Cheapside—Spatterdashers.  
 177. G. B. Pettit and H. F. Smith, New Oxford-street—Gas stoves.

#### INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

196. J. Lamacraft, Westbourne-grove—Envelopes, or means for securing letters, notes, and similar documents—26th January, 1855.  
 208. S. Mayer and W. Bush, Bristol—Reducing flint and other substances, rendering them suitable for the manufacture of porcelain and other earthenware articles.—27th January, 1855.  
 213. A. L. Lenoir, Paris—Breach-loading fire-arms.—27th January, 1855.

#### WEEKLY LIST OF PATENTS SEALED.

*Sealed February 2nd, 1855.*

1708. Edward Hallen, Cornwall-road, Lambeth—Improvements in chairs, chair bedsteads, and other seats and bedsteads.  
 1716. Charles Frederick Stansbury, 17, Cornhill—Improvements in machinery for making rope. (A communication.)  
 1717. Charles Frederick Stansbury, 17, Cornhill—Improvements in locomotive and steam-boiler furnaces. (A communication.)  
 1718. Charles Frederick Stansbury, 17, Cornhill—Improvements in cut nail machines. (A communication.)  
 1719. Charles Frederick Stansbury, 17, Cornhill—Improved air-tight vessels. (A communication.)  
 1749. John Hackett, Derby—Improvements in the manufacture of garments, or of parts of garments, or of appendages or appliances to garments.  
 1803. Edward Trenery, Stourbridge—Improved machine for driving pile.  
 1901. William Symington, King William-street, City—Improvements in apparatus for heating air by means of steam.  
 2117. James Hammond, 9, Brunswick-street, Stamford-street—Holding a book in such a position that it may be read with ease and comfort in an erect, reclining, or completely recumbent position, to be called "Hammond's suspension reading desk."  
 2259. James Scott, M.D., Argyle-square, Edinburgh—Improvements in apparatus for facilitating surgical operations and teaching anatomy.  
 2457. Richard Knight, 9, Charterhouse-square—Improvements in apparatus for testing iron as to its capacity for receiving magnetism and in magnetic apparatus.  
 2485. James Hartley, Sunderland—Improvement in the manufacture of perforated glass.

2487. William Eley, 38, Broad-street, Golden-square—Improvement in the manufacture of ball cartridges.

2523. Frederick Le Meurier, Guernsey—Improvement in the manufacture of ball and shot cartridges.

2531. William James Cantelo, 4, Leicester-square—Improvement in the construction of barrels of ordnance and small arms, and in balls or projectiles used therewith.

2533. Charles Iles, Peel Works, Birmingham—Improvements in metal bedsteads.

2557. George Fergusson Wilson, and John Chase Craddock, Belmont, Vauxhall—Improvements in the manufacture of candles and night lights.

2575. Nathaniel B. Carney, New York—Circular power loom for weaving circular, cylindrical, and irregular shaped fabrics.

*Sealed February 3rd, 1854.*

1458. Alexander Southwood Stocker, Hall-street, City-road—Improvements appertaining to match boxes, and in the fitting, stoppering, and covering of tubes and other vessels of glass, porcelain, and other materials.

*Sealed February 6th, 1855.*

1734. Joseph Hulme, Manchester—Improvements in apparatus for preventing the explosion of steam-boilers, for measuring the pressure of steam and other fluids, and in heating water for the supply of steam-boilers.

1735. Henry Turner, Leeds—Improvements in preparing hides, and in cutting them into straps for driving machinery.

1736. Henry Moorhouse, Denton—Improvements in certain parts of machinery or apparatus used in preparing cotton, wool, or other fibrous materials to be spun.

1742. William Charles Pitt, Pimlico—Improvements in the construction of knobs and roses used with locks, latches, and such like fastenings as are constructed with spindles.

1744. Plato Oulton, Dublin—Improvements in obtaining motive power.

1750. William Houghton Claburn, Pitt-street, Norwich—Improvements in the manufacture of shawls and scarfs.

1753. Samuel Bickerton, Oldham—Improved gas-light governor or regulator, which invention is also applicable to regulating the supply of water and other fluids.

1754. Joseph Reimann and Friedrich Sauermann, Breslaw, Prussia—Improvements in fire-arms.

1766. John Petrie, junior, Rochdale—Improvements in machinery or apparatus for drying wool.

1772. William Crosland, Hulme—Improvements in machinery or apparatus for governing or regulating the speed of steam engines or other motive-power engines.

1776. Earl of Aldborough, Stratford-lodge, Wicklow—Improvements in projectiles.

1790. John Lamb and Thomas Lamb, Kidderminster—Improvements in jacquard machinery, and in the apparatus connected therewith.

1802. Sara Spaldin, Hull—Improvements in apparatus for preventing loss of life at sea.

1812. Peter Armand le Comte de Fontaine Moreau, 4, South-street, Finsbury—Improvements in preserving corn and other dry seed.

1814. William Ker and Matthew Ker, Tottenham-court-road—Improvement in the frames of expanding tables.

1837. John Grist, Islington—Improvements in machinery for the manufacture of casks, barrels, and other similar articles.

1840. Augustin Jacquelin, Paris—Improvements in the manufacture of gas for illumination and heat.

1851. John Norton, Cork—Igniter or apparatus for igniting explosive and combustible materials.

1858. William Brooke, 5, Martin's-lane, Cannon-street—Consuming smoke and condensing noxious and other gases and vapours, and converting the products thereof to valuable purposes, which now escape to the injury of the animal and vegetable life.

1943. Isaac Pim Trimble, M.D., New York—Improvements in regulating the temperature in conservatories and other apartments, or in ventilating the same.

2306. Pierre Benoit Chapuis, 3, Place des Repentirs, Guillotière, Lyons—Improvement in the harness used for weaving. (Partly a communication.)

2318. Thomas Osborne and William Eldred, Leicester—Improvements in apparatus for retarding and stopping railway carriages.

2336. William Charles Theodore Schaeffer, 11, Stanhope-terrace, Hyde-park-gardens—Improvements in treating the waste washwaters of woollen and other mills.

2361. George Davis, Southampton—Improvements in taps or cocks.

2582. William Hawthorn, Newcastle-upon-Tyne—Improvements in safety-valves.

2594. Nathaniel Johnston, Bordeaux—Improvements in arranging buildings and apparatus for breeding, rearing, preserving, and carrying leeches.

#### WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
3679	Jan. 25.	The People's Sofa Bed .....	William Schnell .....	12, Denmark-street, Soho.
3680	" 26.	Perforated Polisher and Sharpener .....	Richard Edwards .....	12, Finsfield-place, Bow.
3681	Feb. 5.	The Crimean Cloak .....	Frederick William Lee.....	82, Fetter-lane.
3682	" 7.	Camp Stove and Cooking Apparatus ...	Thomas Coombs Williams...	3, London-street, Reading.